Operator's Manual

revolution

UHS Propane Burnisher

Failure to read and understand this manual before operating this machine or performing service on this machine may result in injury to the operator or nearby personnel or result in damage to the machine or nearby property. Each operator must be trained in the operation of this machine before being allowed to use it. Contact Amano Pioneer Eclipse Customer Service at 1-800-367-3550 or 1-336-372-8080 or an authorized Amano Pioneer Eclipse Distributor to inquire about training or to request a replacement manual.

La falta de leer y de entender este manual antes de usar esta máquina o de realizar servicio en esta máquina puede dar lugar a lesión al operador o al personal próximo o a resultado en daño a la máquina o propiedad próxima. Cada operador debe ser entrenado en la operación de esta máquina antes de ser permitido utilizarla. Ponerse en contacto con el servicio de Amano Pioneer Eclipse 1-800-367-3550 o 1-336-372-8080 o un distribuidor autorizado por Amano Pioneer Eclipse para investigar sobre el entrenamiento o para solicitar un manual.

Manquer de lire et de comprendre ce manuel d'utilisation avant l'utilisation de cette machine ou avant faire de maintenance sur la machine peut être résulter en blessure à l'opérateur ou au personnel proche ou peut endommagé la machine ou la propriété proche. Chaque utilisateur doit être entraîné dans l'opération de cette polisseuse avant l'utilisation. Veuillez contacter le service àpres-vente de Amano Pioneer Eclipse à 1-800-367-3550 ou 1-336-372-8080 et/ou un distributeur de Amano Pioneer Eclipse pour vous renseigner concernant l'entraînement ou pour obtenir un autre manuel d'utilisation.

CE

Pioneer Eclipse®

DANGER! For your safety, if you smell gas:

1. Extinguish any open flame.
2. Open window.
3. Do not touch electrical switches.
4. Immediately call your gas supplier.

DANGER!

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

Record This Important Information

Date of Purchase _____

Purchased From _____

Address _____

City _____ State _____ Zip _____

Phone _____ Contact _____

Machine Model _____

Machine Serial Number _____

Important Phone Numbers

Medical Emergency _____

Police _____

Fire Department _____

In this Operation Manual you will find three statements that you must read and observe to ensure safe operation of this machine.

DANGER! indicates that the possibility of severe bodily injury or death can occur if DANGER! statements are ignored. Read and observe all DANGER! statements included in the Operation Manual and attached to the machine.

WARNING! indicates that the possibility of bodily injury to the operator and other people can occur if WARNING! statements are ignored. Read and observe all WARNING! statements included in the Operation Manual and attached to the machine.

CAUTION! indicates that the possibility of damage to the machine or other property can occur if CAUTION! statements are ignored. Read and observe all CAUTION! statements included in the Operation Manual and attached to the machine.

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Quick Reference Specifications:

Capacities:

- Engine Oil:
  - Filter not removed: 2L (2.1 U.S. qt.)
  - Filter removed: 2.3L (2.4 U.S. qt.)

- Cooling System: 2.7L (2.9 U.S. qt.)

Routine Maintenance Parts:

- Engine Monitor and Diagnostic Software: MP322300
- Engine Oil Filter: KA490652078
- Engine Primary Air Filter: KA110137020
- Engine Secondary Air Filter: KA110137019
- Spark Plug: KA920702112
- Battery: MP120800
- Drive Belt: MP041000 (24”)
  MP273000 (28”)
- Fuses:
  - 20A: SS2570
  - 7.5A: MP043000
- Dust Skirt: RV022400 (24”)
  RV022700 (28”)
- Dust Container Filter: MP095100
- Pads:
  - 24” Blue Blend: PD006024
  - 24” White Lightning: PD010024
  - 24” Thermal Thunder: PD001024
  - 24” Natural Poly-Blend: PD002024

  - 28” Blue Blend: PD006028
  - 28” White Lightning: PD010028
  - 28” Thermal Thunder: PD001428
  - 28” Natural Poly-Blend: PD002028

Your Authorized Amano Pioneer Eclipse Distributor _____

Authorized Amano Pioneer Eclipse Distributor Telephone Number _____

Amano Pioneer Eclipse Customer Service: 1-800-367-3550 _____

Safety Precautions

Anyone operating the machine should read the following carefully and be informed of potentially dangerous operating conditions. Operators should be familiar with the location and use of all safety devices on the machine. DO NOT use the machine if it is not in proper operating condition, and report any damage or operation faults immediately.

DANGER! Operate this machine in a well-ventilated area. It is the responsibility of the machine operator, machine owner, and the site manager to ensure that the air exchange system where the machine is to be used is in compliance with local building codes and is operating properly. Failure to operate this machine in a well-ventilated area could lead to sickness, injury or death from carbon monoxide (CO) exposure.

DANGER! This machine emits CO, which is a colorless, odorless, non-irritating gas. The first symptoms of CO exposure include headache, drowsiness, dizziness, and nausea. If you should experience any of these symptoms while operating the machine, shut off the machine and go outside to get fresh air. Have the machine tested for CO emissions by a qualified service technician before using it again.

DANGER! Prolonged or high exposure to CO may result in vomiting, confusion, and collapse in addition to loss of consciousness and muscle weakness. If such symptoms occur, call 911 for emergency medical attention. If you have experienced these symptoms, **DO NOT** operate this machine or any other propane machine again until cleared by a physician. Excessive exposure to CO can result in death.

DANGER! Propane is a highly flammable fuel. If you smell propane, shut off the machine immediately and take it outside the building. **DO NOT** use the machine again until a qualified service technician has corrected the propane leak. **DO NOT** use or allow another person to use an ignition source such as a cigarette lighter near the propane machine. **DO NOT** smoke near the propane machine. **DO NOT** vent a propane cylinder inside a building. **DO NOT** store propane cylinders inside a building.

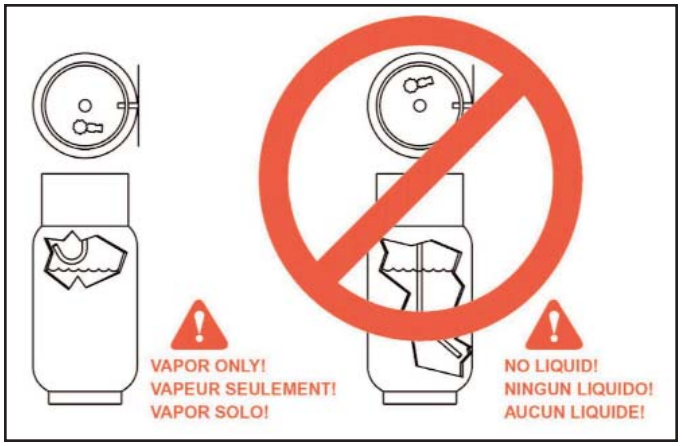
DANGER! This machine has parts including the pad assemblies that can cause severe injury if these parts are contacted while they are moving. **DO NOT** allow any part of the body or clothing to come in contact with these parts while they are moving. **DO NOT** try to change the pads while the machine is running. **DO NOT** allow other people to come near the machine while it is in operation. **DO NOT** allow the machine to run unattended. **DO NOT** leave the machine in a place where unauthorized or untrained personnel could use the machine. **DO NOT** run the machine with the pads off center, damaged or missing. **DO NOT** run machine with unsecured guards and shields. **DO NOT** operate the machine if the machine has loose parts.

DANGER! Federal law and California State law prohibits the following acts or the causing thereof: (1) the removal or rendering inoperative by any person other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new engine for the purpose of emission control prior to its sale or delivery to the ultimate purchaser or while it is in use, or (2) the use of the engine after such device or element of design has been removed or rendered inoperative by any person.

Among those acts presumed to constitute tampering are the acts listed below: **DO NOT** tamper with the original emission related part.

- Throttle body and internal parts
- Spark plugs
- Magneto or electronic ignition system
- Air cleaner elements
- Crankcase
- Cylinder heads
- Breather chamber and internal parts
- Intake pipe and tube
- Regulator
- Fuel injector
- Fuel lock-off

WARNING! Overfilled or liquid withdraw cylinders can damage the fuel system and create a fire hazard. **DO NOT** overfill the cylinder or use a liquid withdraw cylinder on the machine. If the regulator freezes or the machine shuts down due to a "System Rich" fault (See "Controls and Instrumentation" Section), stop the burnisher and take the cylinder outside. Inspect cylinder, if a vapor withdraw cylinder, use gloves or pliers to open bleeder valve and purge cylinder until only vapor is escaping. If it is a liquid withdraw cylinder, replace with a vapor withdraw cylinder. Both cylinders are shown below.



WARNING! Modifications or alterations to this machine can lead to personal injury or damage to the machine. **DO NOT** make unauthorized modifications or alterations to this machine. Amano Pioneer Eclipse assumes no liabilities for injury or damage resulting from an unauthorized modification or alteration to the machine. Any unauthorized modification or alteration to this machine voids all warranties.

WARNING! The muffler and the engine become hot enough while the machine is in operation, and for a long time after the machine is shut off, to cause severe burns. **DO NOT** touch these parts of the machine until they have cooled.

WARNING! Injury can occur to the eyes and body while using the machine. Safety goggles, safety shoes, and safety clothing are recommended while operating the machine.

WARNING! Continuous exposure to high noise levels can cause hearing loss. Hearing protection is recommended while the machine is in operation.

WARNING! Machine vibration may cause tingling or numbness in the fingers or hands. Gloves are recommended to reduce machine vibration. If tingling or numbness persists, shut off the machine. If the vibration is caused by loose parts such as an off center pad, adjust or tighten these parts before using the machine again.

CAUTION! A dirty engine filter can cause overheating. Check and replace following recommended maintenance schedule.

CAUTION! Overheating can be caused by insufficient or low oil. Check oil before each use, and fill or change as needed.

CAUTION! Never over-fill with oil. Over-filling could cause irreparable damage to the engine.

CAUTION! Overheating can be caused by dirty oil. Check oil before each use and change regularly following recommended maintenance schedule.

CAUTION! DO NOT engage starter for more than 10 seconds. Allow a 60 second cool-down period for second failed start-up attempt.

CAUTION! Perform all recommended scheduled maintenance. Regular maintenance of your propane powered floor machine is necessary to keep it in safe working condition.

CAUTION! DO NOT operate machine unless trained and authorized. **DO NOT** operate machine unless you have read and understand the operation manual. **DO NOT** operate machine in flammable or explosive areas.

CAUTION! Before starting machine ensure all safety devices are in place and functioning properly. Before starting machine check for proper operation.

CAUTION! When using machine, go slowly on inclines or slippery surfaces. Use care when operating machine in reverse.

CAUTION! When servicing machine, stay clear of moving parts. **DO NOT** wear loose clothing when working on machine. Block machine wheels before raising or jacking up machine. Use hoist stands that will support the weight of the machine. Wear eye and ear protection when using pressurized air or water. Disconnect battery connections before servicing machine. Use only replacement parts supplied by Amano Pioneer Eclipse or an Amano Pioneer Eclipse Authorized Distributor or Service Center.

CAUTION! When loading or unloading machine onto or off a truck or trailer, turn machine OFF. Only use a truck or trailer that will support the weight of the machine to transport. **DO NOT** push the machine onto or off a truck or trailer unless the load height is 15 in (380mm) or less from the ground. Block machine wheels when transporting. Tie the machine down securely to truck or trailer when transporting.

This machine is manufactured for commercial use only.

This machine is designed and manufactured for indoor use in burnishing wax coated hard floor surfaces. Amano Pioneer Eclipse does not recommend use of this machine in any environment other than an indoor environment. This propane powered floor machine is designed and manufactured for commercial floor burnishing only. This machine is designed to burnish most modern types of floors including composition tile, stone, marble, terrazzo, and resilient floor covering, and some coated wood floors. Even though NFPA 58 8-4.5 says..."these machines shall be permitted to be used in buildings frequented by the public, including the times when such buildings are occupied by the public," Amano Pioneer Eclipse suggests usage when occupancy of a given work area is minimal.

These machines should not be used

- In nursing homes, hospitals, day-care centers, etc.
- By unqualified or untrained personnel.
- Unless properly maintained and adjusted.
- On areas with obstructions such as thresholds, floor outlet boxes, etc.
- In areas where loose tile or other objects are present.
- In rooms without proper ventilation.

Refueling and Storage of Fuel Cylinders

The Revolution uses a 20lb (9.1kg) capacity aluminum or steel cylinder, which meets the DOT 4E240 standards. These cylinders are also listed by UL. In addition, the steel cylinder meets European TPED specifications and is CE compliant. Filling should be done ONLY by a qualified propane dealer. FILL THROUGH THE SERVICE VALVE ONLY. A properly filled cylinder should not exceed 80% of the rated capacity. **DO NOT** attempt cylinder repair. Return the cylinder to your propane dealer if repair is necessary. Please note that DOT regulations prohibit shipping of cylinders after the cylinder has been filled with propane. When not in use, cylinders always should be stored outside in an upright position in a secure, tamper-proof, steel mesh storage cabinet. The cabinet may be located next to the building, but with at least five feet (1.5 m) of space between the cabinet and the nearest building opening (door or window). The cylinder to be used on the Revolution is a vapor withdraw cylinder. **It is not intended to be used with a liquid withdraw system. Conversely, a liquid withdraw cylinder is not to be used with this machine.** The use of a liquid withdraw cylinder on a vapor withdraw system could freeze the regulator and create a fire hazard. The National Fire Protection Association (NFPA) Standard for Storage and Handling of LP Gas is the appropriate authority for safe propane use. A copy of this publication is available through the National Fire Protection Association (1-800-344-3555).

Canadian Safety Requirements

1. A sign indicating "NO SMOKING" shall be permanently displayed at the storage area. The sign shall be in accordance with the sign required in Clause 10.12.3 of CAN/CGA-B149.2-M91, Propane Installation Code.
2. When the cylinder is attached to the floor maintenance machine for use, the operator shall not leave the unit unattended except for short periods of time such as rest stops, washroom, or meal stops.
3. The requirements of 1.10.1 (e) and (g) do not apply in industrial buildings.
4. A floor maintenance machine shall only be used in buildings:
   a. Provided with continuous mechanical ventilation that removes products of combustion to the outdoors of not less that 300 CFM for each 10,000 BTU-hr or fraction thereof.
   b. Provided with natural ventilation of not less than 300 CFM for each 10,000 BTU-hr input or fraction thereof, based on a maximum of one-quarter-air exchange per hour for the net building volume.
5. The owner of a floor maintenance machine shall ensure that the operator has participated in a course authorized by the manufacturer of the unit on the safe handling of propane and the safe operation of the machine.
6. The owner of a floor maintenance machine shall ensure that the unit is maintained in accordance with the manufacturer's recommended maintenance procedures in a safe operating condition and the owner shall maintain a record of the maintenance for a period of two years.
7. Before transporting a floor maintenance machine, the cylinder shall be securely fastened with the system valve closed, and the cylinder shall be located in a well-ventilated space.

Operator Responsibility

The operator is responsible for performing the recommended daily maintenance and checkups of the machine to keep it in good working condition. The operator must inform the service mechanic or supervisor when recommended maintenance procedures are required as described in the MAINTENANCE section of this manual.

Read this manual carefully before operating this machine.

FOR SAFETY: **DO NOT** operate machine before reading and understanding the operation manual.

Check the machine for shipping damage.

Keep your machine regularly maintained by following the maintenance information in this manual. We recommend taking advantage of a service contract from your Amano Pioneer Eclipse Authorized Distributor or Service Center. Order parts and supplies only from an Authorized Amano Pioneer Eclipse Distributor. Use the parts illustration section of your manual when ordering parts.

During and after operation, perform the recommended daily and hourly procedures outlined in the Maintenance Chart.

Test for Operator-Ear Sound Pressure Level

Amano Pioneer Eclipse measures and rates the operator-ear sound pressure level for hand-guided floor treatment and floor cleaning machines for industrial use. All tests are performed in accordance with European Machinery Directive (98/37/EC).

- Outdoor test area consists of a flat open space free from effects of signboards, buildings or hillsides for at least 15 m (50 ft) from the center of the test surface. Indoor tests are conducted in a semi-anechoic or sound deadening room.
- The test surface is a single sheet of floor covering at least 1 m (3.3 ft) wider and longer than the equipment being tested. In order to not affect the sound reading, the observer taking readings is at least 2 m (6.6 ft.) from the equipment being tested, or standing directly behind the operator.
- All machines are tested while stationary and centered on the test surface. With the traction drive in neutral (where applicable) the test is conducted with the machine at maximum engine or motor speed as specified by the manufacturer.
- The operator is located in the normal operating position with the microphone or meter supported independent of the machine, 1,68 m (66 in) above the test surface, 25 cm (10 in) to the right and left centerline of the operators position, and 20 cm (8 in) to the rearmost point of the handle, with the handle in the most forward position.
- The sound level meter is observed for a minimum of 5 seconds or until a stabilized reading is obtained. The maximum repeatable sound level observed during the test at each microphone position is recorded and documented.

Test for Hand-Arm Vibration at the Grip Surface of Hand-Guided Machinery

Amano Pioneer Eclipse measures and rates the vibration at the machine-hand contact surface of hand-guided machines that are provided with handles in accordance with European Machinery Directive (98/37/EC).

- The test area consists of a flat open floor area that allows the machine to be operated normally.
- The transducer is mounted firmly at a point halfway along the length of the handle where the handle would normally be held.
- Machines are tested while stationary, with all mechanisms necessary for the equipment to perform its intended functions engaged and the traction drive in neutral (if applicable). The machine will be tested at maximum engine or motor speed as specified by the manufacturer of the subject machine.
- The measurements are recorded from the dominant axis.

Machine Preparation

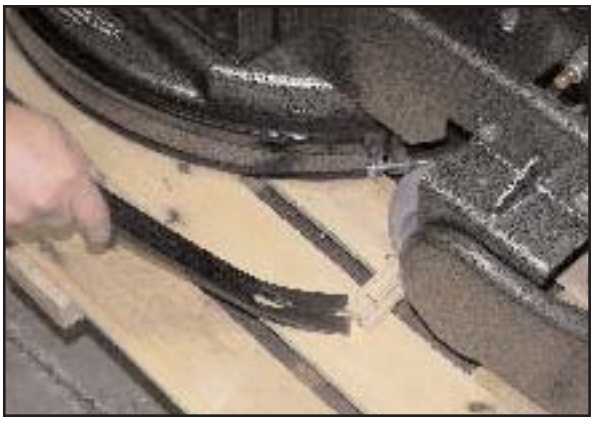
Unpacking the Machine

The machine is shipped boxed on a wooden pallet. To unpack machine:

1. Cut and remove black bands holding the box to the pallet.
2. Remove staples attaching the box to the platform at the bottom edge of the box.
3. With two people, one at either end of the box, lift box straight up and off machine.

4. Cut and remove black bands securing the machine to the pallet.
5. Remove back brace.

6. Remove front wheel brace.



7. Open engine cover.

8. Remove engine air scoop and connect the battery. Refer to *Maintenance* section.

9. Check machine fluid levels (engine oil and coolant). See *Maintenance* section. **Note: If machine was shipped by airfreight, add engine oil.**
10. Carefully back the machine off of the pallet.

Filling the LP Cylinder

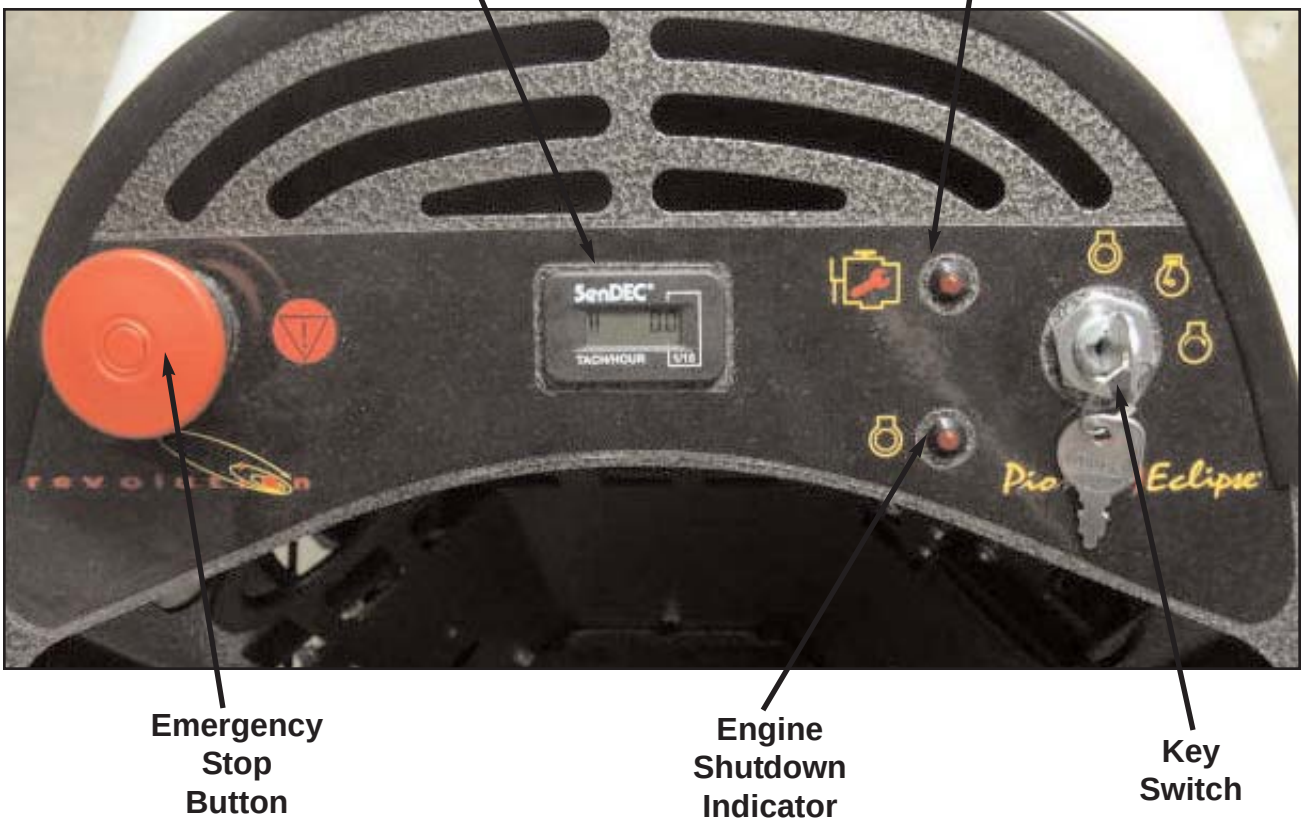
The Revolution uses the 20lb (9.1 kg) capacity cylinder, which meets the D.O.T. 4E240 standards. These cylinders are also listed by UL. In addition, the steel cylinder meets European TPED specifications and is CE compliant. Filling should be done ONLY by a qualified propane dealer. A properly filled cylinder should not exceed 80% of the rated capacity. Do not overfill the cylinder or use a liquid withdraw cylinder on the machine. The use of a liquid withdraw cylinder on a vapor withdraw system could freeze the regulator and create a fire hazard.

Installing the LP Cylinder

Place the Safe-Fill® cylinder on the cylinder platform at the back of the machine. Connect the fuel hose coupling to the service valve by turning to the right (clockwise). HAND TIGHTEN ONLY! Make sure coupling is not cross threaded and check for leakage by noting any propane odors immediately after cylinder is connected. Finally, connect the two ends of the tank strap together.

To Remove the LP Cylinder, reverse the above procedure. Always connect or change cylinders in a well-ventilated area.

Controls and Instruments



Service Engine Indicator

The Revolution has an onboard ECU that monitors and controls the engine's fuel system. If a problem occurs, the Service Engine Indicator alerts the operator with a series of blink codes. This is explained further in the *Maintenance* section.

Engine Shutdown Indicator

If the engine shuts down abnormally, a LED will light. If this occurs, stop the machine immediately and refer to the "Machine Troubleshooting" section in this manual.

Engine Ignition Switch

The Revolution features a key switch ignition.
Start: Turn the key all the way clockwise or START to engage the engine starter motor. Release the key when the engine starts.
Note: *If the engine is cold, start the engine with the bail throttle pulled back.*
Off: Turn the key to the back or OFF position.
Note: *For safety, always close the propane cylinder valve to stop the engine and then turn the key switch to the OFF position.*

Engine Bail Throttle

The engine bail throttle controls the engine speed and engages the burnish clutch. To increase engine speed and engage clutch, pull the bail back.

Hour Meter

The hour meter records the number of hours the machine has been powered ON. The hour meter reading is used to mark recommended maintenance intervals. The hour meter alerts the operator when the machine requires scheduled maintenance. This occurs after the first 8 hours and every 100 hours thereafter. At these intervals the meter will flash “OIL” for service. The meter will begin flashing one hour before recommended service interval and continue until one hour past the recommended service interval. The meter will reset itself after the preset interval has passed.

Emergency Stop

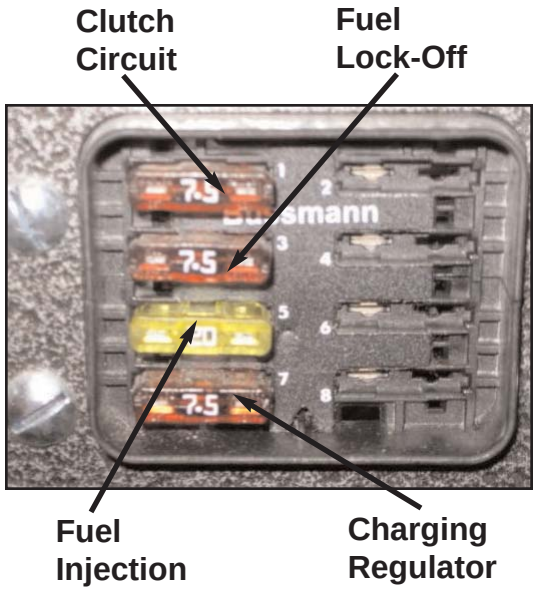
The emergency stop is provided for added safety. To disable the machine, press the red button.
CAUTION! The emergency stop should only be used in the event of an emergency or for added safety after the machine has been shut down. The engine should be stopped by closing the propane cylinder valve and turning off the key switch.

Pad Change

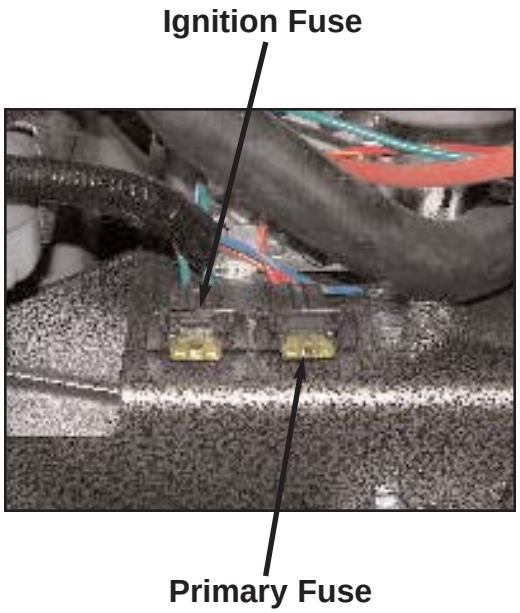
1. Close the valve on the propane cylinder, allow the engine to stop and turn the machine OFF.
2. Remove the propane tank.
3. Rock the machine back by either pushing down on the operator handle or lifting up the front of the machine.
4. Remove centering device and inspect pads. If pads have worn less than 1/4" (6mm), replace them.

Fuses

The machine's electrical circuit is protected by fuses, which stop the flow of current in the event of a circuit overload. Once a fuse blows, it must be replaced. If the overload that caused the fuse to fail is still present, the new fuse will fail and the problem must be corrected. **DO NOT** bypass any fuse. The fuse panel is located on the right side of the bulkhead.



The primary fuses are located on the right side of the engine near the starter motor.



How the Machine Works

The Revolution is a propane burnisher that has a pad driver that is belt driven via an electric clutch. The clutch is controlled by a bail on the handle. Dust generated during burnishing is contained by a floating steel skirt and collected in a dust container.

Pre-Operation Checklist

- Check the engine oil level. Add oil if needed. Refer to *Maintenance*.
- Check the engine coolant level. Add coolant if needed. Refer to *Maintenance.*
- Inspect the engine radiator and clean off any debris or dust buildup. Refer to *Maintenance*.
- Inspect the burnishing pad and replace, if necessary. Refer to *Maintenance.*
- Inspect the pad holder for cracks or damage! Replace if necessary. Refer to *Maintenance*.

WARNING! A DAMAGED PAD HOLDER ROTATING AT HIGH SPEEDS MAY BE AN EXTREME HAZARD IF IT SHOULD DISINTEGRATE.

- Inspect the drive belt. Replace if necessary. Refer to *Maintenance.*
- Check the machine for leaks or loose fasteners.

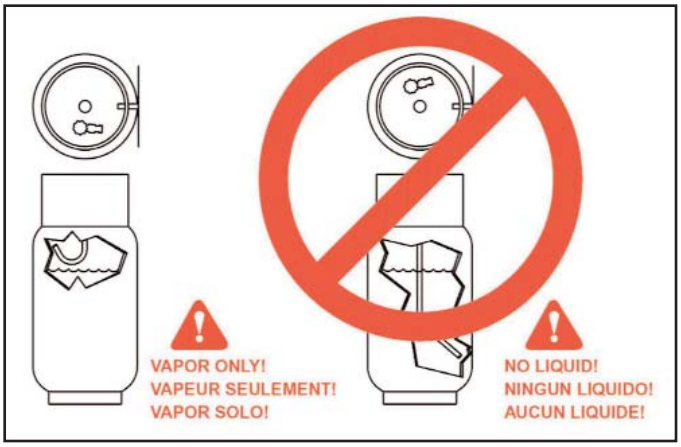
LP Fuel Cylinder

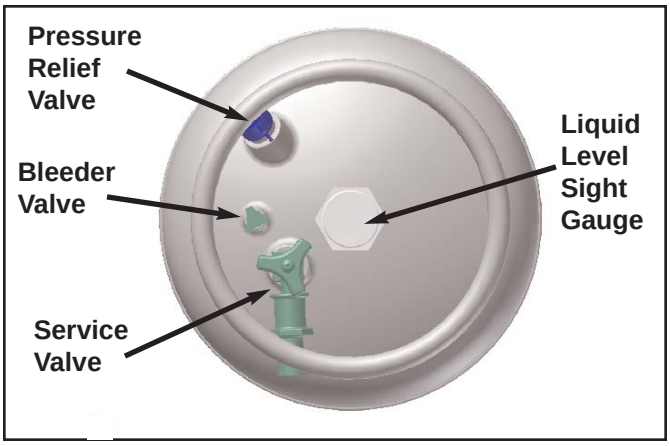
The Revolution uses the 20 lb (9.1 kg) capacity cylinder, which meets the D.O.T. 4E240 standards. These cylinders are also listed by UL. In addition, the steel cylinder meets European TPED specifications and is CE compliant. Filling should be done ONLY by a qualified propane dealer. A properly filled cylinder should not exceed 80% of the rated capacity. Do not overfill the cylinder or use a liquid withdraw cylinder on the machine. The use of a liquid withdraw cylinder on a vapor withdraw system could freeze the regulator and create a fire hazard.

Installing the LP Cylinder

Place the Safe-Fill® cylinder on the cylinder platform at the back of the machine. Connect the fuel hose coupling to the service valve by turning to the right (clockwise). HAND TIGHTEN ONLY! Make sure coupling is not cross threaded and check for leakage by noting any propane odors immediately after cylinder is connected. Finally, connect the two ends of the tank strap together.

Only Use a Vapor Cylinder!





Starting the Machine

1. Complete your pre-operation check.
2. Turn propane cylinder service valve counter-clockwise to open.

Note: *Always open the service valve slowly to allow pressure to equalize in the hoses. Opening the service valve too quickly may cause the flow check valve to engage, limiting the fuel flow.*

3. With the engine bail throttle pulled back, engage the starter by turning the key switch to the starting position for approximately 5 seconds. If the engine does not start, release the key switch for 10 seconds, then try to start again for another 5 seconds.
4. After the engine has started, allow the engine to warm up for approximately 30 seconds. For optimum performance, only burnish at the full throttle position.

Note: *The Revolution comes with an onboard ECU that continually monitors and controls the engine's fuel injection system. In addition, the machine is equipped with a catalytic muffler. The Service Engine light will NOT be illuminated as long as the machine is safely and properly operating. Refer to the "Machine Troubleshooting" section, if the Service Engine light flashes.*

WARNING! Catalytic mufflers require a few minutes to warm up before effectively removing harmful emissions. Make sure of proper ventilation during this warm-up period!

Burnishing

1. Dust mop and scrub the floor to clean it.
2. After the engine has been started and properly warmed, pull back on the bail throttle to increase engine speed and engage the clutch.
3. Lower the burnishing head to the floor while moving the machine forward.

Note: *The burnisher should always be operated at full throttle engagement to ensure adequate air movement through the cooling radiator.*

4. Try to burnish in open areas with minimal obstructions. Use a smaller burnisher for more confined areas.

CAUTION! Keep the burnisher moving when the burnishing head is rotating. Failure to do this may result in finish damage.

CAUTION! DO NOT add weight to the burnisher head.

CAUTION! DO NOT lift up on the handle to add pressure while burnishing.

Note: To not comply with any of the ***CAUTION!*** statements could cause the engine to overheat and/or damage the padholder, drive components or dust skirt.

5. When done burnishing, push the machine to the desired location. Turn off the LP cylinder service valve. When the fuel is depleted and the engine stops, turn the key switch OFF.
6. Remove the LP cylinder and store properly. Refer to *Refueling and Storage of Fuel Cylinders*.

Post Operation Checklist

- Turn off the LP cylinder service valve. When the fuel is depleted and the engine stops, turn the key switch OFF.
- Check the dust container and dust filter. Empty the container and clean the filter, if necessary. Refer to *Maintenance.*
- Check under the machine for leaks and loose fasteners.

Troubleshooting

ECU with Engine Monitor and Diagnostic Software

The Revolution comes with an onboard ECU that continually monitors and controls the engine's fuel injection system. The engine may be diagnosed by two methods. The first is by the blink codes that are displayed by the Service Engine Indicator on the control panel. The Service Engine Indicator will blink two digit fault codes to indicate engine problems. Blink codes are shown below. The system blinks the first digit of the code, followed by a pause, then the last digit. This will be followed by a long blink and then the sequence will begin again. For example, a “System Rich” failure would have the following code: one blink, pause, and two blinks. A “Low Battery Voltage” failure would have the following code: five blinks, pause, and one blink.

Engine ECU

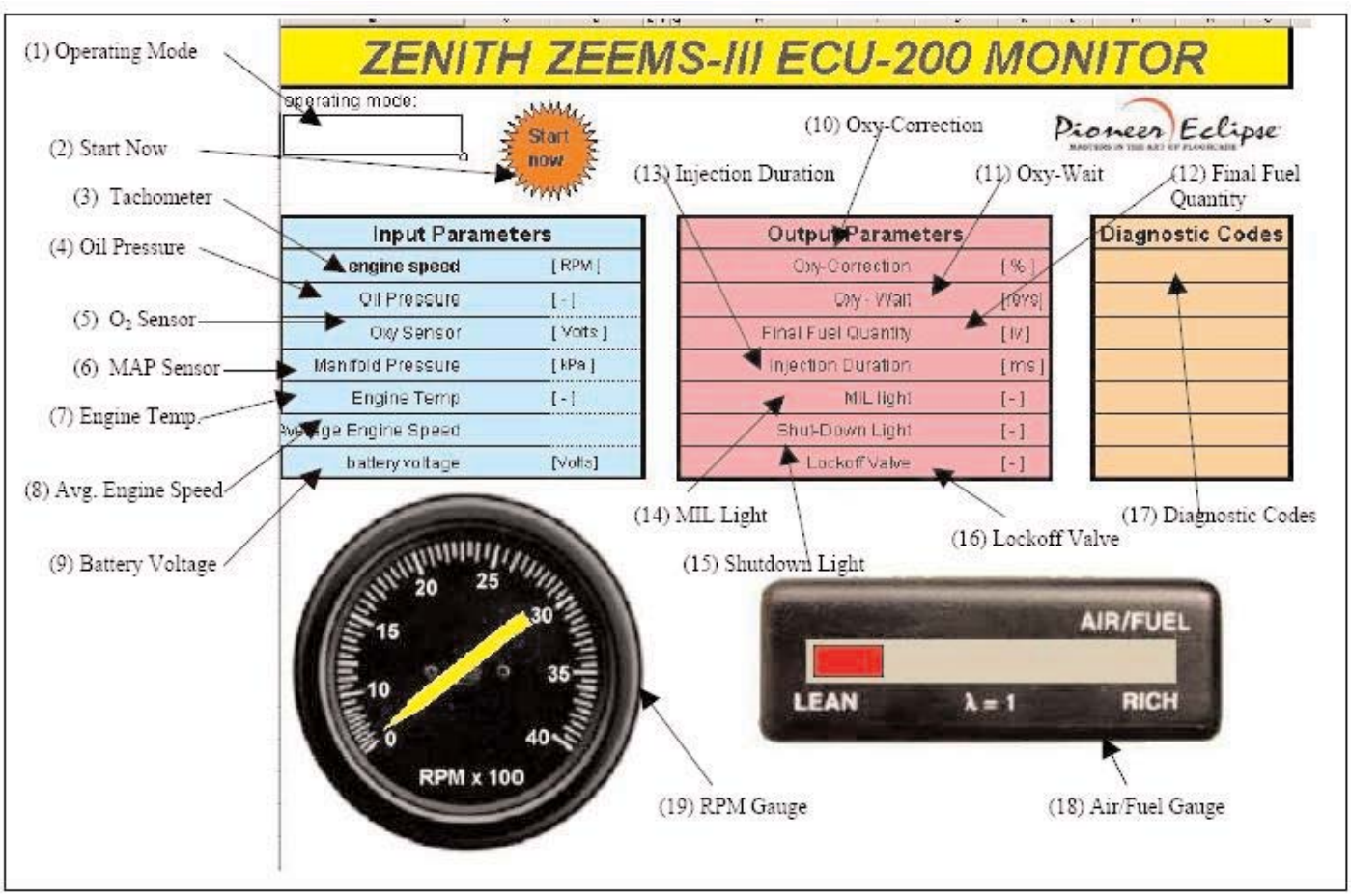
Blinks	Failure	Shutdown Delay
1-2	System Rich	1 min
1-3	System Lean	1 min
2-2	MAP Signal High	3 sec
2-3	MAP Signal Low	3 sec
3-1	Over Speed	3 sec
4-1	Low Oil Pressure	1 Sec
5-1	Low Battery Voltage	NA
6-1	Engine Overheat	1 min

A more detailed evaluation may be found using the Engine Monitor and Diagnostic Software that is available for the Revolution. The software’s display can be seen on the next page.

To view, load the software on a computer according to the instructions on the software CD. Next, connect the engine ECU to the computer via a nine-pin serial cable and communication box.

The software gives a more detailed description of the fault. In addition, it displays critical engine parameters, including engine RPM.

Engine Monitor and Diagnostic Software



Display Explanation

1. **Operating Mode:** Tells operational status of Engine Monitoring Software.
2. **Start Now:** Click this buttion to start the Engine Monitor Software.
3. **Tachometer:** This measures the real time engine speed.
4. **Oil Pressure:** Displays if the Engine Oil Pressure is normal.
5. **O_2 Sensor:** Displays the Oxygen Sensor's voltage signal. This measures the oxygen content of the exhaust, which the ECU uses to constantly adjust the desired Air/Fuel Ratio.
6. **MAP Sensor:** **M**anifold **A**bsolute **P**ressure is the engine's intake vacuum. The ECU monitors this to determine engine load.
7. **Engine Temp:** Displays if the Engine Temperature is normal or too high.
8. **Average Engine Speed:** Displays the average Engine Speed.
9. **Battery Voltage:** Displays the charging system's voltage.
10. **Oxy-Correction:** Displays fuel correction percentagee to achieve desired performance and emissions.
11. **Oxy-Wait:** Displays the Fuel Correction Rate.
12. **Final Fuel Quantity:** Displays the volume of fuel being delivered to the engine.
13. **Injector Duration:** Displays the duration the injector is injecting fuel.
14. **MIL Light:** Displays if the Service Engine Indicator light is ON or OFF.
15. **Shut-Down Light:** Displays if the Engine Shutdown light is ON or OFF.
16. **Lockoff Valve:** Displays if the Fuel Lock is Open or Closed.
17. **Diagnostic Code:** Displays Engine Fault code.
18. **Air/Fuel Gauge:** Displays the Air Fuel Mixture.
19. **RPM Gauge:** Displays the Engine RPM.

Blink Code	Parameter	Failure Mode	Fault Management
12	Oxygen Sensor Fueling Correction	Below Normal Operating Range	1. Verify that the LPG tank is a vapor (not liquid) tank and is not overfilled.
			2. Check MAP sensor vacuum line for leaks & kinks.
			3. Verify that the MAP sensor vacuum line is as short as possible without kinking.
			4. Verify that the MAP port in the MAP sensor is higher than the MAP port at the carburetor.
			5. Verify that fuel pressure to the injector is 9.5 +/-0.5 psig.*
			6. Check the O2 sensor connector and wiring harness for opens or shorts.
			7. Check the fuel injector for debris and internal leakage.*
			8. Connect PC Tool: Verify ECU operation, signals, fuel trim. etc.*
13	Oxygen Sensor Fueling Correction	Above Normal Operating Range	1. Verify that the LPG tank valve is fully open
			2. Check MAP sensor vacuum line for leaks & kinks.
			3. Verify that the MAP sensor vacuum line is as short as possible without kinking.
			4. Verify that the MAP port in the MAP sensor is higher than the MAP port at the carburetor.
			5. Verify that fuel pressure to the injector is 9.5 +/-0.5 psig.*
			6. Check the O2 sensor connector and wiring harness for opens or shorts.
			7. Check the fuel injector for debris and internal leakage.*
			8. Connect PC Tool: Verify ECU operation, signals, fuel trim. etc.*
			9. Verify that there are no air leaks around the carburetor, especially downstream of the throttle plate.*
22	Air Inlet Pressure (MAP)	Below Normal Operating Range	1. Check the O2 sensor connector and wiring harness for opens or shorts.1
			2. Connect PC Tool: Verify ECU operation, signals, fuel trim. etc.*
23	Air Inlet Pressure (MAP)	Above Normal Operating Range	1. Check MAP sensor vacuum line for leaks & kinks.
			2. Connect PC Tool: Verify ECU operation, signals, fuel trim. etc.*
31	Engine Speed	Above Normal Operating Range	1. Verify that the throttle moves freely.
			2. Verify that the throttle plate and cable return to the low idle position.
			3. Verify that the governor is adjusted and functioning properly. Check FD731V Service Manual.*
			4. Check the RPM signal wire and connections.*
			5. Connect PC Tool: Verify ECU operation & signals.*
41	Engine Oil Pressure	Below Normal Operating Range	1. Check oil level.
			2. Check for oil leaks
			3. Check the oil pressure sensor, connector, and wire.
			4. Connect PC Tool: Verify ECU operation, signals, etc.*
51	Battery Voltage, Switched	Below Normal Operating Range	1. Verify that the regulated alternator output voltage is 13-15V.*
			2. Load test the battery.*
			3. Connect the PC Tool: Verify ECU operation, signals, etc.*
61	Engine Coolant Temperature	Above Normal Operating Range	1. Check Coolant level.
			2. Verify that the radiator cooling fins are clean
			3. Verify that the thermostat is working properly. Check FD731V Service Manual.*

*Contact Pioneer Eclipse Certified Technician

Machine Troubleshooting

Problem	Possible Cause	Solution
Engine is hard to start	Propane Cylinder is not properly connected	Check propane cylinder connection.
	Spark plug or head bolts are loose.	Retorque. Check FD731 Service Manual. Contact Pioneer Eclipse Certified Tech.
	Head Gasket blown.	Replace head gasket. Check FD731 Service Manual. Contact Pioneer Eclipse Certified Tech.
	Coil air gap out of adjustment	Adjust coil air gap. Check FD731 Service Manual. Contact Pioneer Eclipse Certified Tech.
Engine will not start	Propane Cylinder is empty.	Install properly filled cylinder.
	Machine is in the pad change position.	Tilt machine forward to operating position.
	ECU fuse blown	Replace ECU fuse.
	Head Gasket blown.	Replace head gasket. Check FD731 Service Manual. Contact Pioneer Eclipse Certified Tech.
	Spark plug gap incorrect.	Adjust gap to 0.025"(.635mm).
	Spark plug defective.	Replace spark plug (KA920702112).
	Coil(s) defective.	Replace coil(s). Check FD731 Service Manual. Contact Pioneer Eclipse Certified Tech.
	Wires broken or disconnected.	Reconnect or replace wires. Contact Pioneer Eclipse Certified Tech.
Engine lacks power	Air filter is dirty.	Clean or replace primary air filter (KA11013-7020) or replace secondary air filter (KA11013-7019).
	Head gasket leaking.	Replace head gasket. Check FD731 Service Manual. Contact Pioneer Eclipse Certified Tech.
	Throttle out of adjustment	Make sure throttle will go wide open.
	Governor out of adjustment or malfuntioning.	Adjust governor and replace if necessary. Check FD731 Service Manual. Contact Pioneer Eclipse Certified Tech.
	Valves need adjusting.	Adjust valves. Check FD731 Service Manual. Contact Pioneer Eclipse Certified Tech.
Machine is burnishing too aggressively.	Adjust wheels are in the back position of the wheel brackets.	Move wheels to front position.
	Improper pads.	Only use recommended burnishing pads.
Burnishing dust is not contained.	Dust container filter is dirty.	Clean Filter
	Skirt is not sealing with the floor.	Adjust or replace skirt.
	Dust scoop is blocked.	Remove obstruction.

Scheduled Maintenance

Operation	Interval						
	Daily	First 8 Hrs.	Every 100 Hrs.	Every 200 Hrs.	Every 300 Hrs.	Every 400 Hrs.	Every 500 Hrs.
Check & add engine oil.	●						
Check coolant level.	●						
Check for loose or lost fasteners.	●						
Check for oil or coolant leakage.	●						
Inspect fuel hose and connections.	●						
Clean dust container filter	●						
Inspect pad holder.	●						
Replace dust container filter	As Required						
Change engine oil.		●	●				
Change engine oil filter.		●	●				
Check & clean primary air filter.			●				
Check secondary air filter.			●				
Inspect battery and battery connections.			●				
Replace primary air filter.					●		
Replace secondary air filter.							●
Inspect, clean, & re-gap spark plugs. Replace, if necessary.			●				
Check & adjust valve clearance.* Retorque heads.*					●		
Clean & lap valve seating surface. *					●		
Change coolant. *						●	
Check engine emissions.							●
Inspect drive belt.			●				
Replace drive belt.	As Required						

* **Check FD731V Service Manual. Contact Pioneer Eclipse Certified Tech.**

Maintenance

Engine

Note: *For all maintenance procedures requiring the engine cover to be removed, please perform the following.*

1. Push the machine to a level surface, turn off the LP cylinder, and remove it.
2. Open the cover by lifting up on the hand cutout.

3. Unlatch the lanyard, lower the cover, and lift straight up.

Note: *For all maintenance procedures requiring the engine air scoop to be removed, please perform the following.*

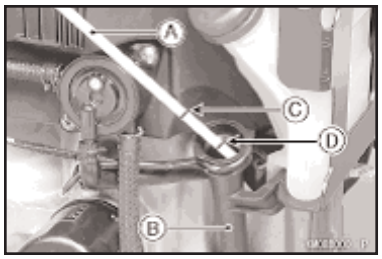
1. After the engine cover has been removed, remove the two front engine air scoop retaining knobs.

2. Push in the sides of the engine air scoop and slide forward.

3. Remove the engine air scoop.

Oil Level Inspection

1. Push machine to level surface.
2. Turn off LP cylinder and remove it.
3. Open the engine cover.
4. Clean area around the oil gauge (A) before removing it.
5. Remove the oil gauge and wipe it with a clean cloth.



6. The machine should be in an upright, level position. If necessary, place a block under the back of the machine or apply weight to the front of the deck to maintain an upright, level position.
7. Insert the oil gauge into the tube (B), but do not tighten the oil gauge.
8. Check the oil level. It should be between the “FULL” (C) and “ADD” (D) marks on the oil gauge.

Note: *If the oil level is near or below the "ADD" mark, remove the oil gauge and add enough engine oil to bring oil level to the "FULL" mark.*

Note: *If the oil level is too high, remove the excess oil by loosening the oil drain valve.*

CAUTION! Do not fill above the "FULL" mark. Excess oil will cause a smoking condition and may cause the engine to overheat.

Oil Change

1. Change the oil after the first 8 hours of operation and every 100 hours thereafter.
2. Start and warm the engine so the oil will drain easily and completely. Push machine to a level surface. Stop the engine.
3. Turn off LP cylinder and remove it.
4. Remove the engine cover.
5. Remove the oil drain hose from the retaining clip, and remove the plug from the end of the hose.

Oil Drain Hose

6. Place a suitable container under the end of the oil drain hose.
7. Open the drain valve by turning counter-clockwise and drain the oil.

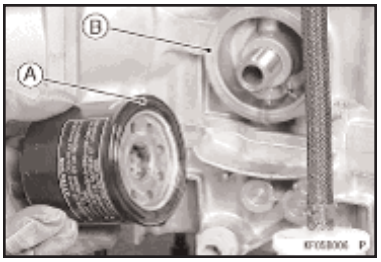
Oil Drain Valve

WARNING! Be careful with hot oil being drained. It may be hot enough to cause severe burns.

8. Close the drain valve by turning clockwise.
9. Remove oil cap and add clean SH or SJ SAE 30 oil. Use 2.1 U.S. qt. (2.0 L) when the filter is not changed and 2.4 U.S. qt. (2.3 L) when filter is changed.
10. Screw in oil gauge. Reconnect the LP cylinder to the fuel hose.
11. Run the engine at low idle for 2 minutes. Check for leaks around the engine.
12. Stop the engine. Check the oil level (see *Oil Level Inspection* section).

Oil Filter Replacement

1. Place a suitable container underneath the oil filter.
2. Using a strap wrench or oil filter wrench, remove the oil filter. Turn the filter counter-clockwise to remove it.
3. Apply a thin coat of new oil or grease to the oil filter seal (A).
4. Install the new filter ***(Amano Pioneer Eclipse part # KA920652078)*** by turning it clockwise.
5. Turn the filter until the seal contacts the mounting surface (B) of the engine. Then, turn the filter BY HAND 3/4 turn more.



6. Reconnect the LP cylinder to the fuel hose.
7. Run the engine at low idle for 2 minutes. Check for leaks around the engine.
8. Stop the engine. Check the oil level (see *Oil Level Inspection* section).

Spark Plug Inspection and Replacement

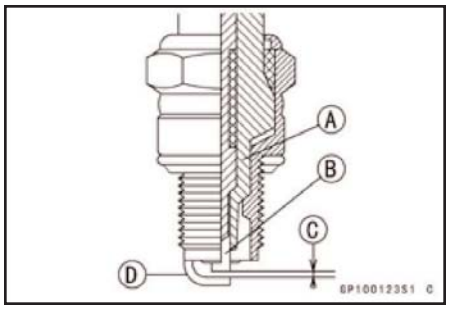
1. Turn off LP cylinder and remove it.
2. Open the engine cover.
3. Pull spark plug cap off of spark plug.
4. Remove spark plug by turning counter-clockwise and inspect it.

Note: *If the plug is oily or has carbon build up on it, clean the plug using a high flash-point solvent and a wire brush or other suitable tool.*

Note: *If the spark plug electrodes are corroded or damaged, or if the insulator is cracked, replace the plug.* ***Use Only Amano Pioneer Eclipse part # KA920702112. Do not use any other spark plug!***

5. Measure the gap with a wire-type thickness gauge. The correct gap is .025 in (.635 mm). If the gap is incorrect, carefully bend the side electrode with a suitable tool to obtain the correct gap.

A: Insulator
B: Center Electrode
C: Plug Gap
D: Side Electrode

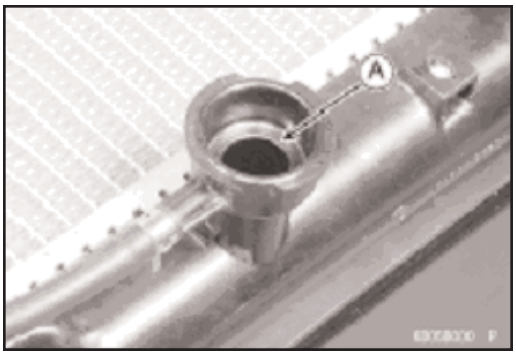


Checking and Adding Coolant

1. Push machine to level surface.
2. Turn off LP cylinder and remove it.
3. Remove the engine cover.
4. Remove the engine air scoop.

WARNING! Always allow the engine to cool before removing the radiator cap. Then remove the cap slowly and carefully to avoid a possible fast discharge of hot coolant which could cause severe burns.

5. Remove the radiator cap by turning it counter-clockwise and check the coolant level in the radiator.
6. Coolant must be level with the filler neck bottom (A) and between the high and low marks on the reserve tank. If additional coolant is required, use only 50% mix of permanent type antifreeze for aluminum engine and radiator. Completely empty, the system requires 2.9 U.S. qt (2.7 L).

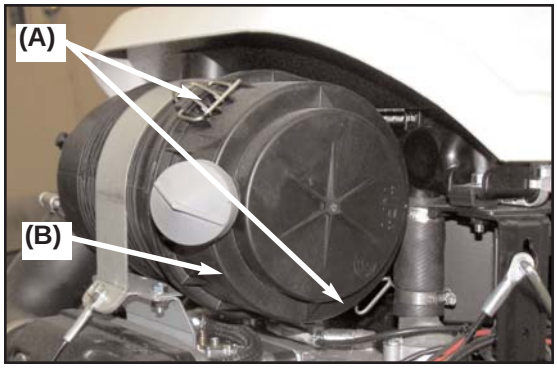


CAUTION! Use only soft or distilled water for the antifreeze mix in the cooling system. If hard water is used, it causes scale accumulation in the water passages and reduces the efficiency of the cooling system.

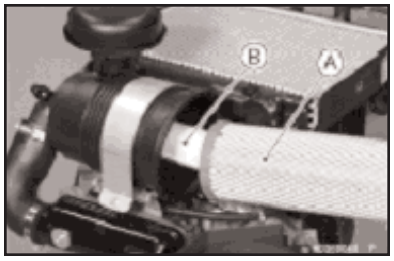
7. Install the radiator cap by pushing it down and turning it clockwise.

Air Filter Inspection and Replacement

1. Push machine to level surface.
2. Turn off LP cylinder and remove it.
3. Open the engine cover.
4. Locate the air cleaner housing, unhook the two clips (A), and remove the cap (B).



5. Remove primary filter (A) and secondary filter (B).



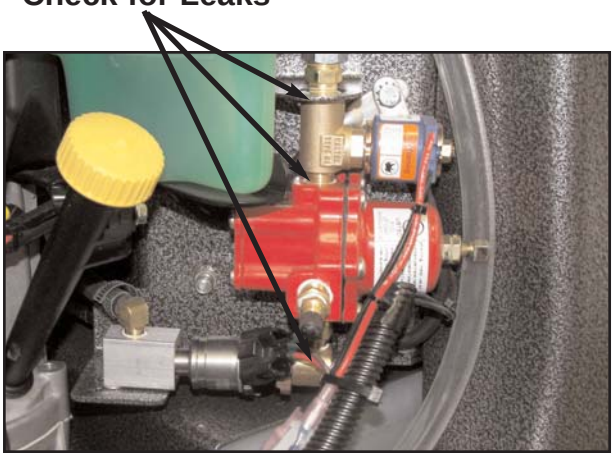
CAUTION! Do not wash the air cleaner filters. Do not oil the air filters. Do not use pressurized air to clean the air filters.

6. Inspect both primary and secondary air filters. If necessary, clean primary filter by lightly tapping and wipe seal ends with a clean cloth. If primary filter cannot be cleaned, is bent, or damaged, it must be replaced **(Amano Pioneer Eclipse part # KA110137020).** If secondary filter is dirty, do not attempt to clean it. Replace it with a new filter **(Amano Pioneer Eclipse part # KA110137019).**
7. Clean the housing with detergent and water and dry thoroughly.
8. Check the housing for cracks or other damage. The housing must seal well and permit only filtered air to the carburetor.
9. Slide the secondary and primary filters into place in the air cleaner housing.
10. Install the cap and fasten the two clips.

Inspect Fuel Hose and Connections

1. Push machine to level surface.
2. Turn off LP cylinder and remove it.
3. Remove the engine cover.
4. Inspect hoses for abrasions and other signs of wear. Replace all worn or damaged hoses.
5. Check for gas leaks by spreading a soapy water solution around all connections while the LP cylinder is reconnected and the service valve is turned ON.

Check for Leaks



6. If a leak is detected, turn off the LP cylinder. If the leak is in a hose, replace it. If the leak is at a fitting, loosen and clean it. Apply pipe-sealing compound and re-tighten it.
7. Recheck for leaks using a soapy water solution. If leaks persist at fittings, replace them and recheck with a soapy water solution once more.

Inspect Radiator and Hoses

1. Push machine to level surface.
2. Turn off LP cylinder and remove it.
3. Remove the engine cover.
4. Remove the engine air scoop.
5. Check the radiator core. If the corrugated fins are deformed, carefully straighten them with the blade of a thin screwdriver.

6. Inspect the inlet and outlet tubes for cracks, kinks, dents, and fractured seams. Repair or replace (refer to Kawasaki's FD731V service manual), if necessary.
7. Check for debris that can be lodged in the radiator. Clean them out by using compressed air or a low-pressure washer.

CAUTION! Using high-pressure water could damage the radiator fins and impair the radiator's effectiveness.

Check and adjust valve clearance. Re-torque heads:

Refer to Kawasaki's FD731V service manual.

Clean and lap valve-seating surface:

Refer to Kawasaki's FD731V service manual.

Change coolant:

Refer to Kawasaki's FD731V service manual.

Maintenance

Machine

Clean Dust Container Filter

1. Push machine to level surface.
2. Turn off LP cylinder and remove it.
3. Loosen the Velcro strap used to retain the dust container and pull out the dust container.

4. Loosen the dust filter retainer knob and remove the dust filter retainer.

5. Pull the dust filter from the container and clean the filter by either tapping the filter on the inside of a waste container or using a vacuum cleaner.
6. Empty the debris in the container and wipe clean.

Note: *Do not use compressed air or water to clean the dust filter. This will damage or destroy the filter and require it to be replaced.*

7. Replace the filter and secure with filter retainer. Place dust container on the machine and secure with the Velcro strap.

Inspect Pads and Pad Holders

1. Push machine to level surface.
2. Turn off LP cylinder and remove it.
3. Rock the machine back by either pushing down on the operator handle or lifting up the front of the machine.
4. Remove centering device and inspect pads. If pads have worn less than 1/4" (6 mm), replace them.
5. Inspect the pad holder for cracks or damage. If the pad holder does not have any damage proceed to step 9.

WARNING! A damaged pad holder rotating at a high rate of speed may be an extreme hazard if it should come apart.

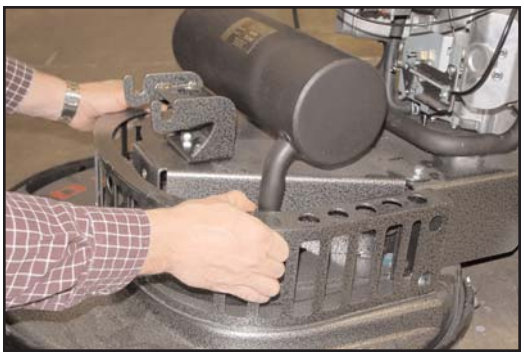
6. If the pad holder needs to be removed, a 3/4" wrench will be required. Locate the wrench flats on top of the spindle shaft by routing the wrench through the front grill and onto the top side of the spindle pulley. With the spindle shaft secure, turn the pad holder counter clockwise until it is free of the spindle shaft.
7. Save the washer and/or spacer that is on the spindle shaft. Be sure they are in place when the pad holder is re-installed.
8. When threading the pad holder onto the spindle shaft, use the wrench to keep the shaft from turning. Be sure the pad holder is tight before proceeding.
9. Secure the pad with the centering device.
10. Lower the machine.

Inspect Drive Belt

1. Push machine to level surface.
2. Turn off LP cylinder and remove it.
3. Rock the machine back by either pushing down on the operator handle or lifting up the front of the machine.
4. Lie on the floor and look at the belt above and behind the shroud. Rotate the pad drive and inspect the belt.
5. If cracks or excessive wear is present, replace with MP041000 (24" Revolution) or MP273000 (28" Revolution).

Replace Drive Belt

1. Push machine to level surface.
2. Turn off LP cylinder and remove it.
3. Remove the engine cover.
4. Remove the front grill.



5. Remove the belt cover.

6. Use a straight blade screwdriver under the belt and over the spindle pulley. Slowly turn the pad driver while guiding the belt off of the pulley.

7. Pull the belt out from the front of the machine.
8. Install new belt on the engine clutch pulley.
9. Route belt around tensioner pulley and start belt on the spindle pulley.
10. Slowly turn the pad drive and guide the belt completely around the spindle pulley.
11. Reattach the belt cover, front grill, and engine cover.

Battery Maintenance

The battery supplied with this machine is a sealed, absorbed glass mat (AGM), maintenance free type. It never needs servicing. When battery replacement is necessary, use Amano Pioneer Eclipse part #: MP120800.

1. Push machine to level surface.
2. Turn off LP cylinder and remove it.
3. Raise the body.
4. Remove the engine cover.
5. Remove the engine air scoop.

6. Disconnect the BLACK negative battery cable first. Disconnect the RED positive battery cable last.
7. Loosen battery-retaining strap.
8. Lift out old battery and replace with new battery.
9. Secure battery with battery-retaining strap.
10. Connect the RED positive battery cable first. Connect the BLACK negative battery cable last.
11. Attach engine air scoop, and engine cover.

PROPOSITION 65 WARNING

- Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm.
- Batteries also contain other chemicals known to the State of California to cause cancer.
- Wash hands after handling.

Body Maintenance

The body may be cleaned with a damp cloth to remove dust and scuff marks. More stubborn scuffmarks on the body exterior can be removed with a vinyl cleaner.

Machine Storage

Only authorized, trained personnel should have access to propane cylinders and machines.

1. Remove propane fuel cylinder when not in use and store it outside in a storage cage in accordance with NFPA Section 5 or Subsection 9.5.2 of CAN/CGAB149.2. Do not release or bleed propane inside the building. Please consult your local Fire Marshal to ensure that you are in compliance with local fire codes.
2. Store machine away from objects that may fall and damage it.
3. Never store machine or fuel cylinders near an open flame or heat-producing device.
4. Make sure machine is cleaned properly before storing.
5. Never store machine with cylinders installed, or store spare cylinders in an enclosed van or trailer.
6. Store machine in a dry location, temperature not to exceed 120°F (50°C).
7. Never store machine with body opened.

Repacking the Machine

Refer to *Unpacking* and repack the machine using original packing materials and container.

Transporting the Machine

When transporting a propane powered floor machine with the fuel cylinder installed, the cylinder should be securely fastened with the service valve closed and the machine should be secured in the vehicle. Any propane fuel cylinders not installed should be securely fastened to avoid movement and damage. Never store machine with cylinder installed or store spare cylinders in an enclosed van or trailer. It is a good practice to check propane cylinders for overfilling before transporting them. If overfilled, correct before loading them in the vehicle by venting the excess propane outside in a safe area using the bleeder valve.

Machine Specifications

Productivity

Burnishing Rate:
28”: 34,000 ft^2/hr (3,159 m^2/hr)
24”: 28,000 ft^2/hr (2,601 m^2/hr)

Engine

Engine: Kawasaki FD731V, 675 cc, water-cooled.

Fuel System: Electronic fuel injection with engine and emissions monitoring system.

Engine Speed, Idle: 1,800-2,000 rpm

Engine Speed, High Idle: 2,800-2,900 rpm

Engine Oil: SAE 30W SH or SJ

Engine Oil Capacity, Filter Not Removed: 2.1 U.S. qt (2 L)

Engine Oil Capacity, Filter Removed: 2.4 U.S. qt (2.3 L)

Coolant: Permanent type of antifreeze for aluminum engine. Mixed 50%.

Coolant Capacity: 2.9 U.S. qt. (2.7 L)

Spark Plug Part #: KA920702112

Spark Plug Gap: 0.025 in (0.635 mm)

Engine Primary Filter: KA110137020

Engine Secondary Filter: KA11013-7019

LP Cylinder Type: 20 lb (9.1 kg) vapor withdraw

LP Cylinder Part #: (North America Only): MP021703 (Aluminum) MP106000 (Steel)

Engine Monitor and Diagnostic Software: MP322300

Machine Specifications

Deck Drive

Drive: Electric clutch with B-Section Belt.

Clutch: MP220000

Drive Belt: 28": MP273000 24": MP041000

Dust Container Filter: MP095100

Recommended Pads:

- 24" Blue Blend: PD006024
- 24" White Lightning: PD010024
- 24" Thermal Thunder: PD001024
- 24" Natural Poly-Blend: PD002024
- 28" Blue Blend: PD006028
- 28" White Lightning: PD010028
- 28" Thermal Thunder: PD001428
- 28" Natural Poly-Blend: PD002028

Pad Holder Assembly: 28": MP032500-DOM MP183700-EJ 24": MP047500-DOM MP196600-EJ

Literature

FD731V Kawasaki Parts Catalog: KA99907258801

FD731V Kawasaki Service Manual: KA99924206501

Electrical

Battery Type: 12V, 275 CCA, AGM starter battery

Battery Part #: MP120800

20A Fuse: SS2570

7.5A Fuse: MP043000

Size

Weight: R280: 377 lbs (171 kg)
R240: 365 lbs (166 kg)

Width: R280: 32.5" (82.6 cm)
R240: 28.5" (72.4 cm)

Length: R280: 64.2" (163 cm)
R240: 62.2" (158 cm)

Height: 41.5" (105.4 cm)

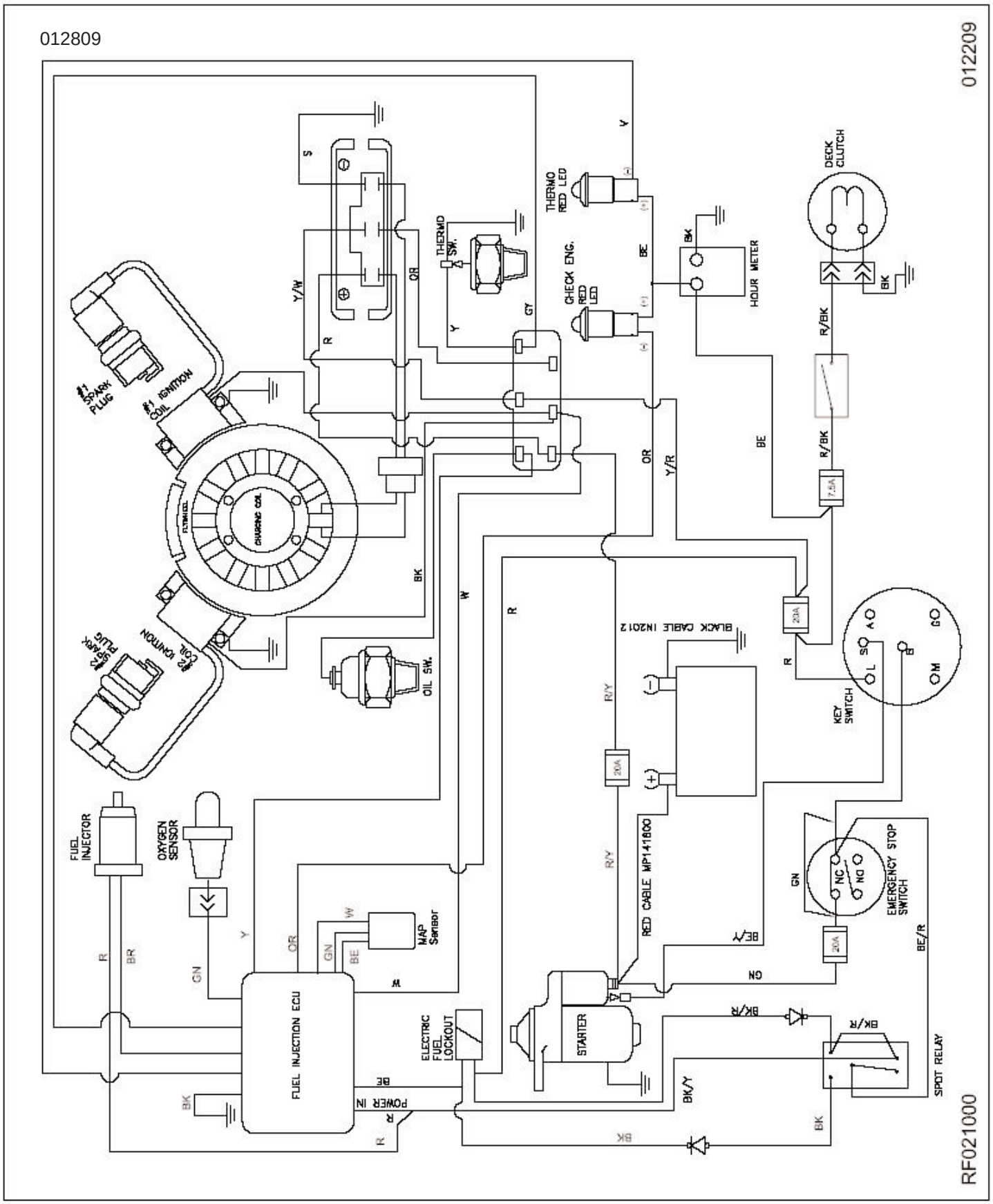
Ergonomics

Noise: 85 dBA

Vibration: Less than 2.5 m/sec^2.

Wiring Schematic

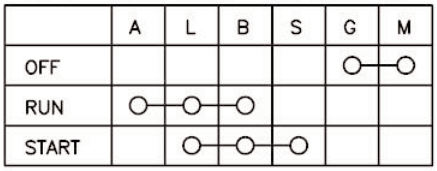
012809



Wiring Schematic Continued

COLOR LEGEND	
SYMBOL	**COLOR**
BK	BLACK
BK/R	BLACK / RED
BK/Y	**BLACK / YELLOW**
BK/W	BLACK / WHITE
BE	BLUE
BE/R	BLUE / RED
BE/Y	BLUE / YELLOW
BR	BROWN
BR20	BROWN (20 AWG)
GY	GRAY
GN	GREEN
GN/W	GREEN / WHITE
OR	OR
O/W	OR / WHITE
V	VIOLET
R	RED
R/BK	RED / BLACK
R/Y	RED / YELLOW
WH	WHITE
Y	YELLOW
Y/R	YELLOW / RED
Y/W	YELLOW / WHITE

KEY SWITCH DIAGRAM

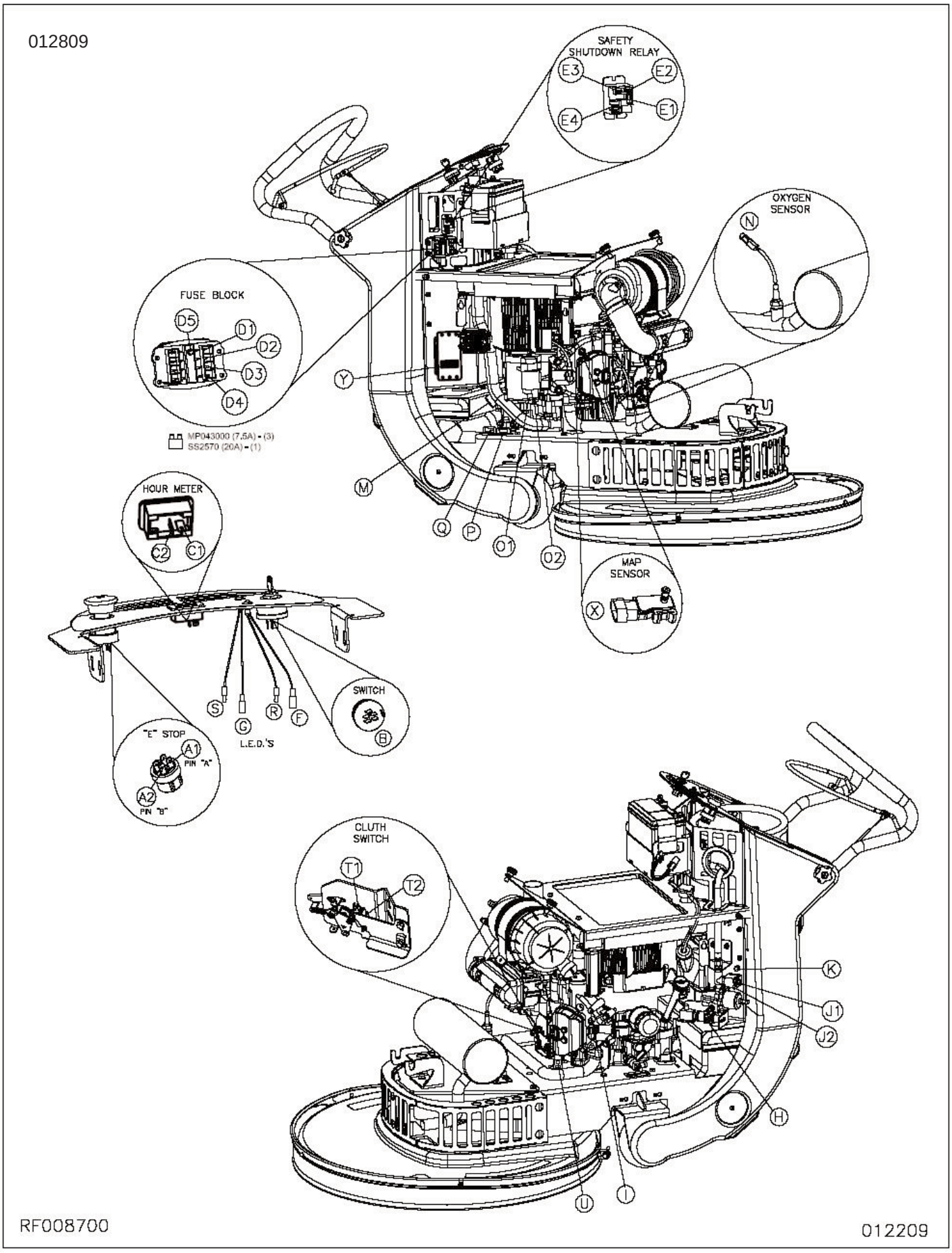


Exploded Views and Replacement Parts

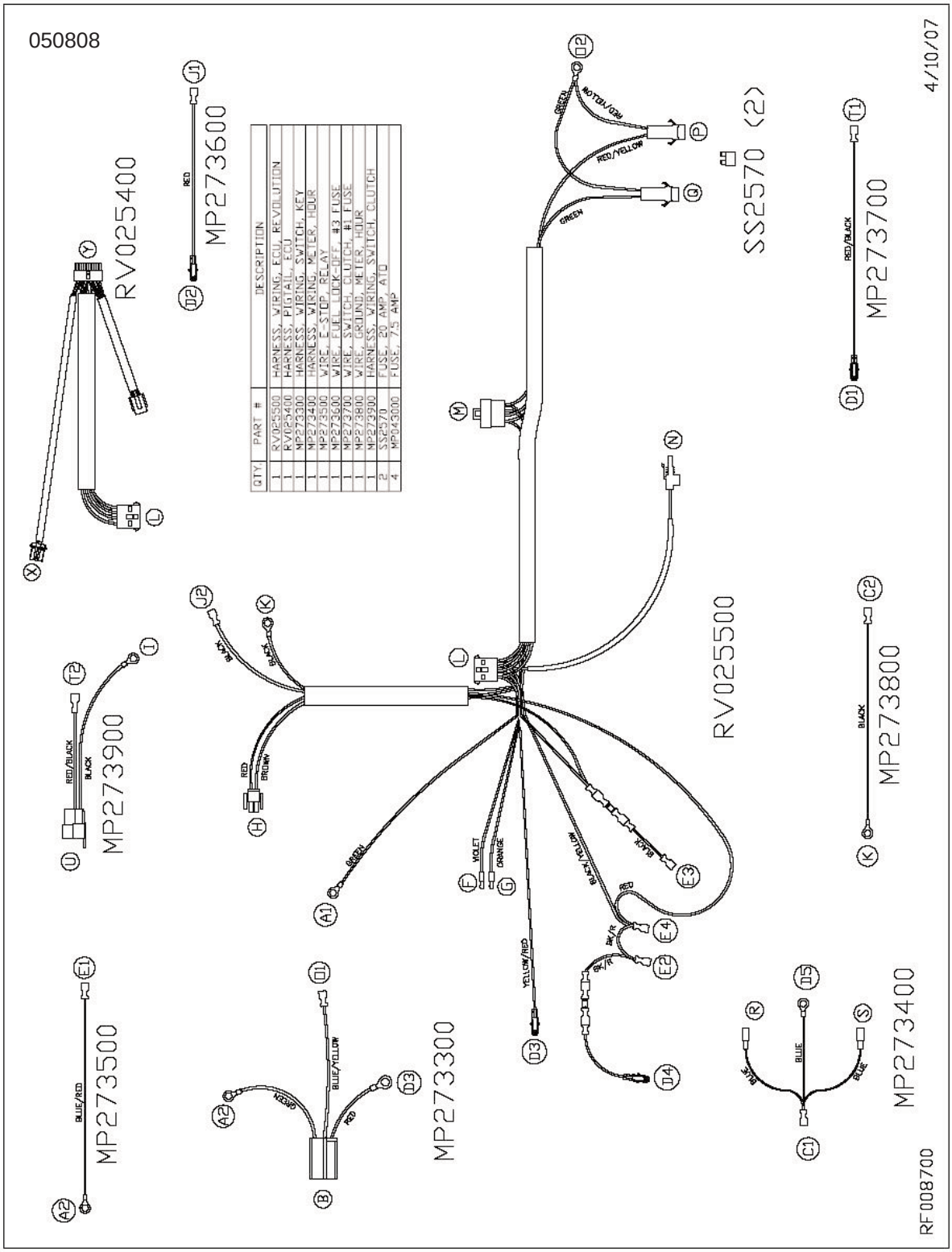
We recommend Amano Pioneer Eclipse quality parts, available through your Amano Pioneer Eclipse Distributor or direct from the factory.

When you order parts, you need to have your machines serial number. This is the number that you recorded in the Product Registration section of this manual.

Electrical Connections



Electrical Connections Continued

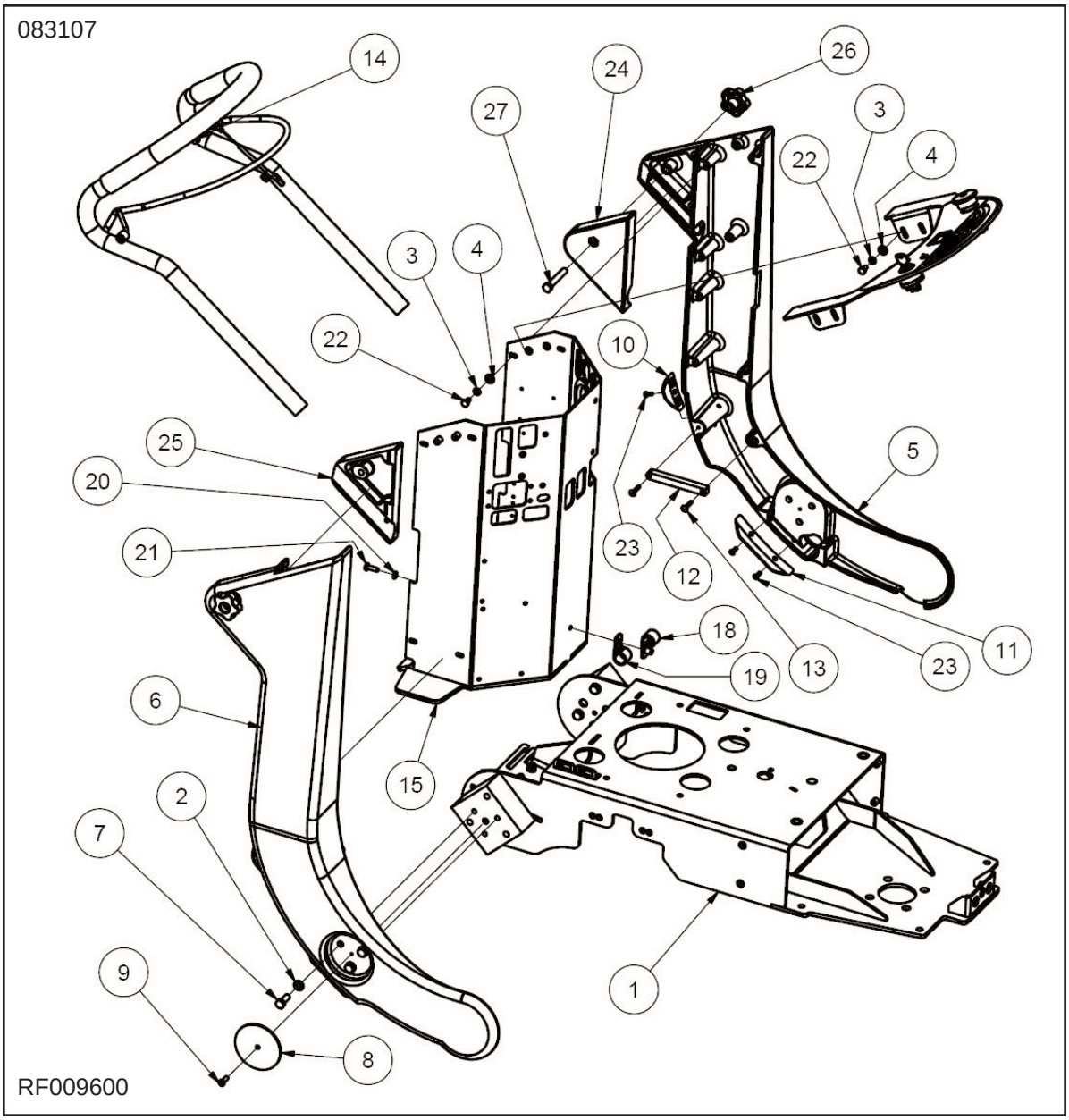


Ref.	Part #	Description	Qty.
1	RV023000	HARNESS, WIRING, REVOLUTION	1
2	MP273300	HARNESS, WIRING, SWITCH, KEY	1
3	MP273400	HARNESS, WIRING, METER, HOUR	1
4	MP273500	WIRE, E-STOP, RELAY	1
5	MP273600	WIRE, FUEL LOCK-OFF, #3 FUSE	1
6	MP273700	WIRE, SWITCH, CLUTCH, #1 FUSE	1

Ref.	Part #	Description	Qty.
7	MP273800	WIRE, GROUND, METER, HOUR	1
8	MP273900	HARNESS, WIRING, SWITCH, CLUTCH	1
9	SS2570	FUSE, 20 AMP, ATO	2
10	MP043000	FUSE, 7.5 AMP	4

032907

Bulkhead Assembly



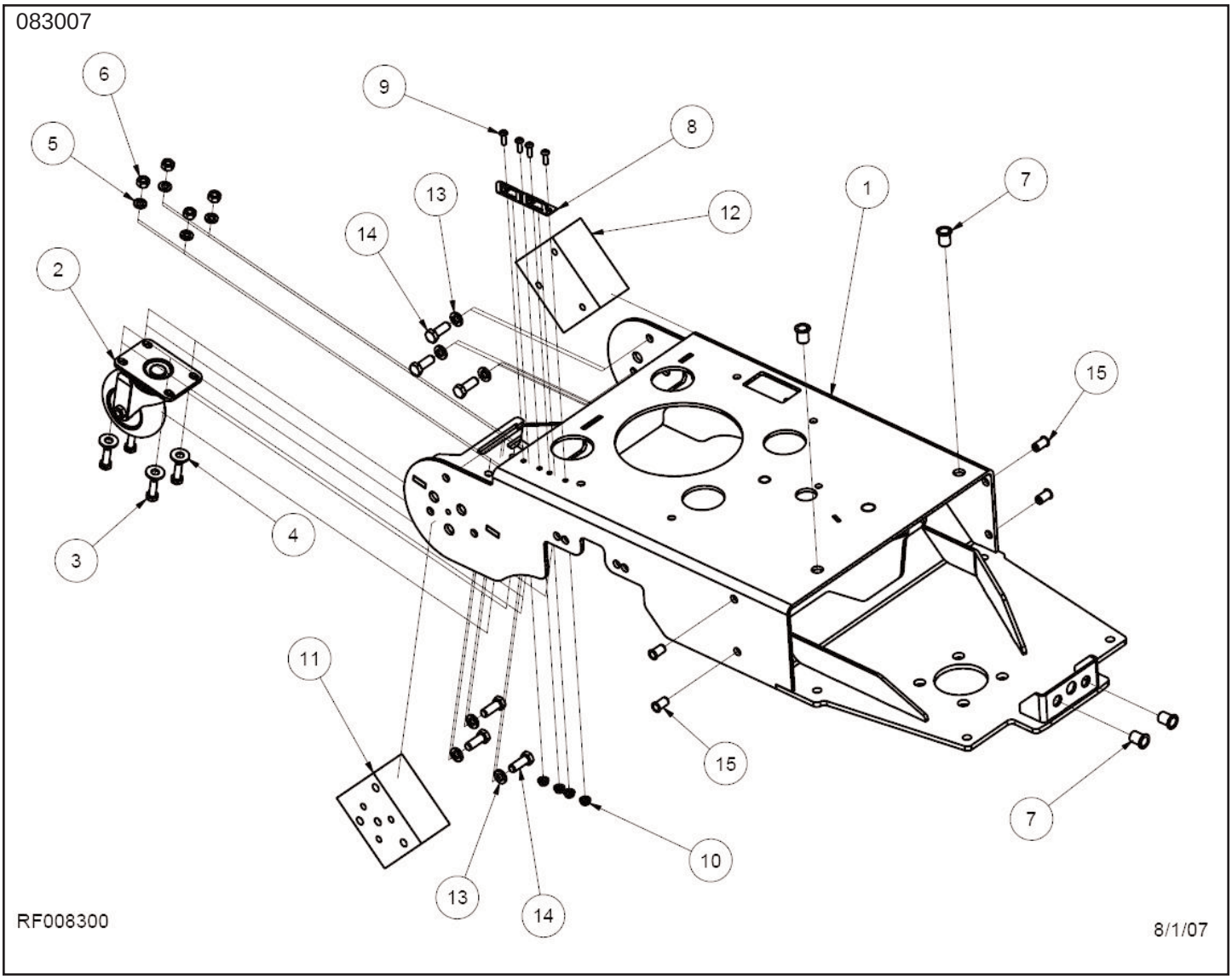
Ref.	Part #	Description	Qty.
1	RV016400	FRAME, REVOLUTION, ASM.	1
2	MX1075	WASHER, LOCK, 3/8”	6
3	NB6110	WASHER, LOCK, 1/4”	12
4	NB3350	WASHER, FLAT, 1/4”	12
5	RV019400	ARM, LEFT, HAMMERTONE, PAINTED	1
6	RV019500	ARM, RIGHT, HAMMERTONE, PAINTED	1
7	NB6042	SCREW, CAP, 3/8” X 1”	8
8	RV009901	HUBCAP, PAINTED	2
9	NB3001	BOLT, HEX, 1/2” X 1”, NC	2
10	MP086500	FOOT, UPPER	2
11	MP086600	FOOT, LOWER	2
12	RV014400	RAIL, BOX, DUST	1
13	NB5350	SCREW, MACHINE, TH, 10-24 X 1”	2

Ref.	Part #	Description	Qty.
14	RV019600	HANDLE, REVOLUTION, ASM.	1
15	RV019900	BULKHEAD, TANK, LP, WELDMENT	1
16	NB6501	INSERT, 1/4-20, COMPRESSION TYPE	5
17	IN1015	TRIM, BATTERY TRAY	1
18	MP298600	CLAMP, 3/4” ID, RETAINER, ASM.	1
19	NB8130	CLAMP, 3/4” ID, RETAINER	1
20	NB6110	WASHER, LOCK, 1/4”	1
21	NB019100	BOLT, HEX, 1/4-20 X 3/4, GD 5	1
22	NB015700	SCREW, CAP, HH, 1/4-20 X 5/8	12
23	NB52816	SCREW, BH, 1/4-20 X 1/2	6
24	RV021100	CLAMP, HANDLE, LS, FINISHED	1
25	RV019700	CLAMP, HANDLE, RS, FINISHED	1
26	RV005100	KNOB, HANDLE	2
27	NB1588	BOLT, HEX, 3/8” X 2 1/2”, NC	2

083107

Frame

083007

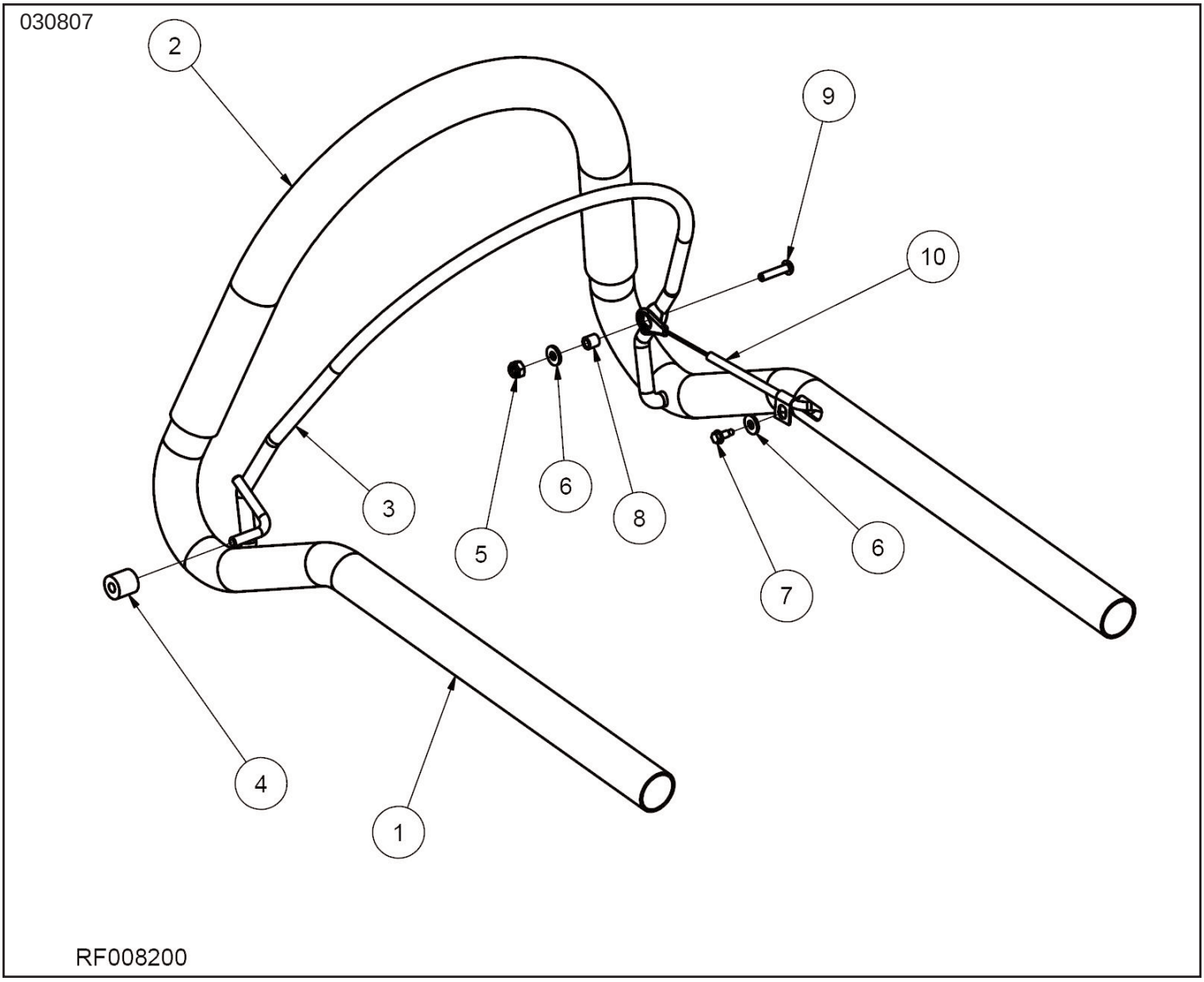


Ref.	Part #	Description	Qty.
1	RV016500	FRAME, REVOLUTION, WELDMENT	1
2	MP027500	CASTER, 3.5”, SWIVEL, PLATE MOUNT	1
3	NB6545	SCREW, CAP, HH, 5/16”-18 X 1”	4
4	NB9267	WASHER, FLAT, 5/16”	4
5	NB6111	WASHER, LOCK, 5/16”	4
6	NB3260	NUT, 5/16”-18, NC	4
7	NB010200	INSERT, 5/16”-18, COMPRESSION TYPE, AVK	4
8	RV010000	BRACKET, FUSE, HOLDER	2

Ref.	Part #	Description	Qty.
9	NB049200	SCREW, BH, 10-24 X 5/8”, SS	4
10	NB9510	NUT, SPIN LOCK, 10-24	4
11	RV018000	BLOCK, MOUNTING, FRAME, RS	1
12	RV023300	BLOCK, MOUNTING, FRAME, LS	1
13	MX1075	WASHER, LOCK, 3/8”	6
14	NB6042	SCREW, CAP, 3/8” X 1”	6
15	NB045800	INSERT, 1/4-20, .165-.260 GRIP, COMP. TYP	4

083007

Handle Assembly

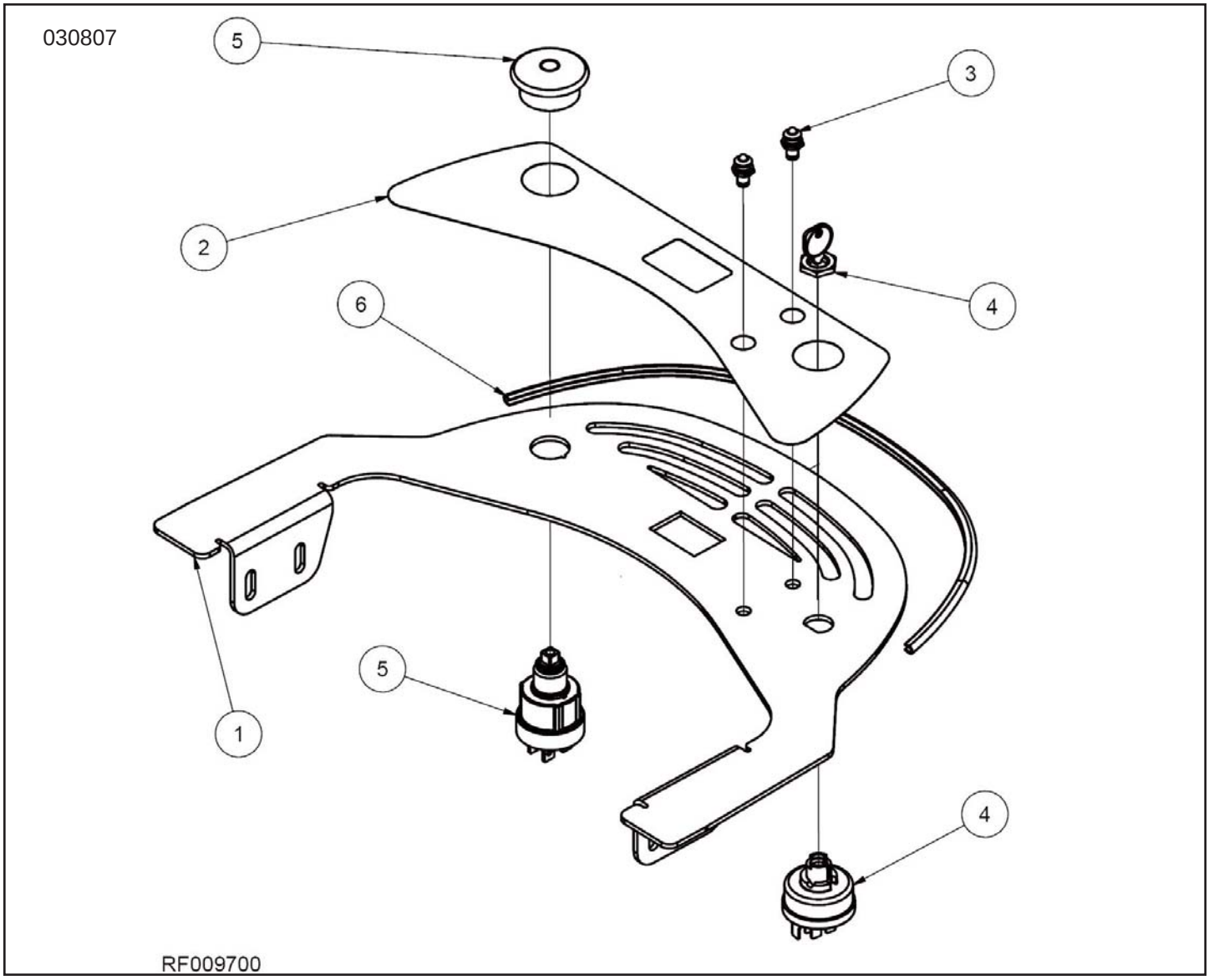


Ref.	Part #	Description	Qty.
1	RV015000	HANDLE, REVOLUTION, SLOTTED	1
2	MP272100	GRIP, FOAM, 1 1/8” I.D. X 24”	1
3	RV011200	BAIL, ASM.	1
4	NB012200	BUSHING, RUBBER, 1/4 ID, 5/8” OD X 5/8”	1
5	NB9735	NUT, LOCK, 10-24, NYLON	1

Ref.	Part #	Description	Qty.
6	NB9645	WASHER, FLAT, #10	2
7	NB4382	SCREW, DRILL KWIK, 8 X 1/2”	1
8	NB028300	BUSHING, CABLE, BAIL	1
9	NB049100	SCREW, BH, 10-24 X 7/8”, SS	1
10	MP106500	CABLE, THROTTLE, CONTROL	1

032907

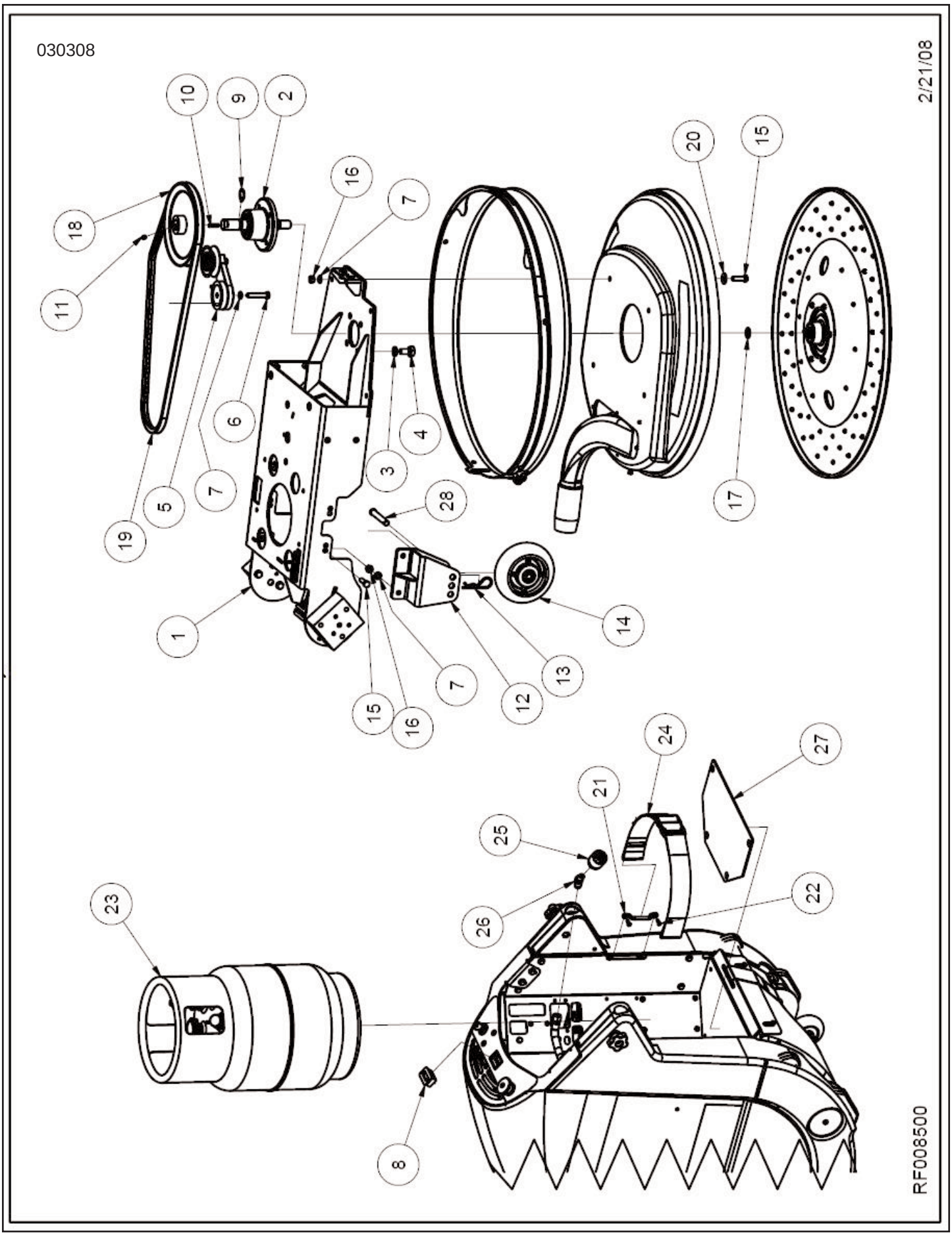
Control Panel



Ref.	Part #	Description	Qty.
1	RV020801	PANEL, DASH, CONTROL, FORMED	1
2	RV020900	DECAL, PANEL, DASH	1
3	MP200100	LIGHT, RED, EXTERNAL RESISTOR	2
4	MP199000	KEYSWITCH, BURNISHER, RIDE-ON	1
5	MP151700	SWITCH, STOP, EMERGENCY	1
6	MP139800	EDGING, WEAR, SKIRT, STEEL	1

032907

Bottom Assembly

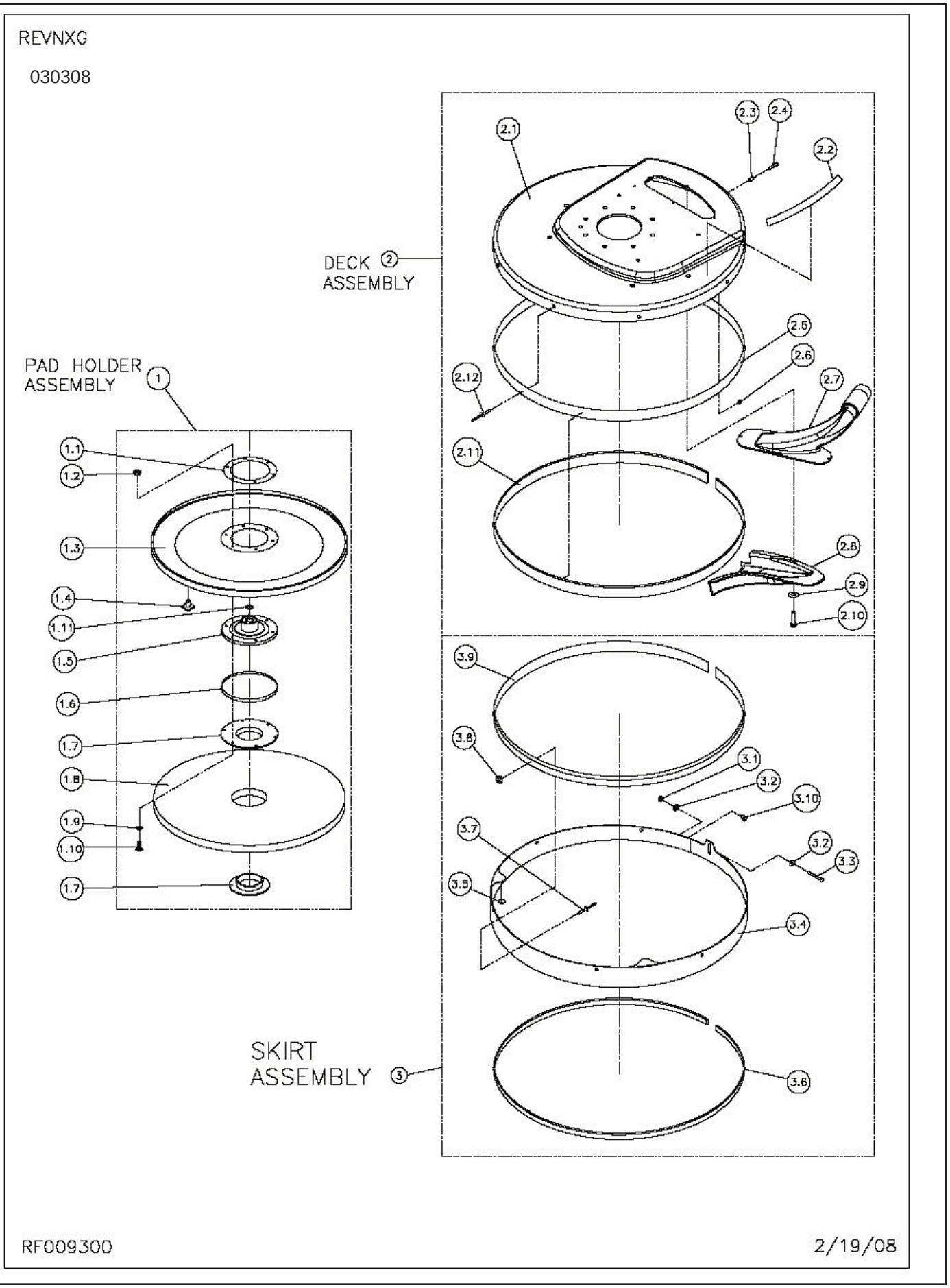


Bottom Assembly

Ref.	Part #	Description	Qty.
1	RV016400	FRAME, REVOLUTION, ASM.	1
2	MP318600	SPINDLE, REVOLUTION, THREADED, ASM.	1
3	MX1105	WASHER, LOCK, 1/2”	4
4	NB6863	BOLT, HEX, 1/2” X 1”, NC	4
5	MP269900	TENSIONER, PULLEY, 3”, ASM.	1
6	NB4791	SCREW, CAP, 3/8” X 2”	2
7	MX1075	WASHER, LOCK, 3/8”	10
8	MP199800	METER, HOUR, SENDEC	1
9	MP7220	RING, RETAINING, EXTERNAL	1
10A	MP326400	KEY, 1/4” x 1/4” x 1 1/4” (24” MACHINES)	1
10B	MP7802	KEY, 1/4” x 1 1/2” (28” MACHINES)	1
11	NB2463	SCREW, SET, HEX SOCKET, 5/16”-18 X 3/8”	2
12	MP270700	BRACKET, WHEEL, REVOLUTION, WELDMENT	2
13	LX2105	CLIP, HITCH PIN, STRAIN RELIEF	2
14	RV009600	WHEEL, PERFORMA, 6” GREY	2
15	NB6044	HEX, CAP, SCREW	8
16	NB046200	NUT, HEX, 3/8”-16, GR5	8
17	NB5700	WASHER, .755 X 1.005 X .060, SS	1
18A	MP329300	PULLEY, 8.00” w/ 1” BORE	1
18B	MP267100	PULLEY, 9.75”, w/ 1” BORE	1
19A	MP041000	BELT, BX-56	1
19B	MP273000	BELT, BX-59	1
20	NB3450	WASHER, FLAT, 3/8”	4
21	RV009500	FOOTMAN LOOP	2
22	NB010400	SCREW, OVAL HD, #10-24 x 5/8”	4
23	MP021703	CYLINDER, PAINTED W/DECAL	1
24	RV009200	STRAP, TANK HOLDING	1
25	MP4500	COUPLER, QUICK REGO, FEMALE	1
26	MP4331	FITTING, 54 X 6, REG TO FUELOCK	1
27	MP153900	PAD, TANK, LP	1
28	NB053400	PIN, CLEVIS, 1/2” x 3 1/2”	2

011509

Deck Assembly



Deck Assembly Continued

28” PADHOLDER ASSEMBLY

Ref.	Part #	Description	Qty.
1	MP032500	PADHOLDER, 28”, COMPLETE ASM.	1
1.1	MP196300	RING, RELIEF, STRESS, LARGE, PADHOLDER	1
1.2	NB3275	NUT, LOCK, 1/4”	6
1.3	SA004000	PADHOLDER, 28”, W/STUDS ONLY	1
1.4	MP8310	VELCRO, HOOK, STUDS	68
1.5	MP195800	FLEXI-DISC, W/O LIP, YELLOW, 80 DURO	1
1.6	MP066300	RING, SPACER, CENTER LOK II	1
1.7	MP012700	RETAINER, PAD, CENTER LOK II (SCREW IN)	1
1.8	PD006028	PAD, 28” BLUE BLEND-RND	1
1.9	NB3350	WASHER, FLAT, 1/4”	6
1.10	NB9319	SCREW, BH, 1/4”-20 X 1 1/4”	6
1.11	NB5700	WASHER, .755 X 1.005 X .060, SS	1

28” DECK ASSEMBLY

Ref.	Part #	Description	Qty.
2	RV022500	SHROUD, 28” REVOLUTION, ASSEMBLY	1
2.1	RV022600	SHROUD, 28”, REVOLUTION, PAINTED	1
2.2	MP007300	DECAL, KEEP HANDS/FEET	1
2.3	MP139900	BUSHING, SKIRT, STEEL	1
2.4	NB038800	SCREW, SOCKET HD, 1/4”-20 X 1 1/4” W/LOCTITE	1
2.5	MP8300	VELCRO, HOOK, 1” W/ADHESIVE, 25 YDS/ROLL	2.8 YDS
2.6	NB3275	NUT, LOCK, 1/4”	1
2.7	RV007600	TUBE, DUST	1
2.8	RV013200	SCOOP, 28”	1
2.9	NB3350	WASHER, FLAT, 1/4”	7
2.10	NB3001	SCREW, BH, 1/4”-20 X 3/4”	5
2.11	MP139600	FELT, POLYESTER, 28 OZ, BLACK	8.3FT
2.12	NB038700	RIVET, 3/16” X 1/2” X 3/8” HD	9

28” SKIRT ASSEMBLY

Ref.	Part #	Description	Qty.
3	RV022700	SKIRT, STEEL, 28” REVOLUTION, ASSEMBLY	1
3.1	MX1040	NUT, HEX, 1/4”-20	1
3.2	NB3350	WASHER, FLAT, 1/4”	2
3.3	NB050600	BOLT, HEX, TAP, 1/4”-20 X 2 1/2”	1
3.4	PG006100	SKIRT, STEEL, 28”, PAINTED	1
3.5	MP140000	FELT, DOT	1
3.6	MP139800	EDGING, WEAR, SKIRT, STEEL	1
3.7	NB043900	RIVET, 3/16” X 1/2” X 5/8” HD, BLACK	5
3.8	NB044000	WASHER, FLAT, #10, BLACK	5
3.9	MP139700	MOLDING, BUMPER, SKIRT, STEEL	8.3FT
3.10	NB6501	INSERT, 1/4”-20, COMPRESSION TYPE	1

24” PADHOLDER ASSEMBLY

Ref.	Part #	Description	Qty.
1	MP047500	PADHOLDER, 24”, COMPLETE ASM.	1
1.1	MP196300	RING, RELIEF, STRESS, LARGE, PADHOLDER	1
1.2	NB3275	NUT, LOCK, 1/4”	6
1.3	SA007800	PADHOLDER, 24”, W/STUDS ONLY	1
1.4	MP8310	VELCRO, HOOK, STUDS	76
1.5	MP195800	FLEXI-DISC, W/O LIP, YELLOW, 80 DURO	1
1.6	MP066300	RING, SPACER, CENTER LOK II	1
1.7	MP012700	RETAINER, PAD, CENTER LOK II (SCREW IN)	1
1.8	PD006024	PAD, 24” BLUE BLEND-RND	1
1.9	NB3350	WASHER, FLAT, 1/4”	6
1.10	NB9319	SCREW, BH, 1/4”-20 X 1 1/4”	6
1.11	NB5700	WASHER, .755 X 1.005 X .060, SS	1

24” DECK ASSEMBLY

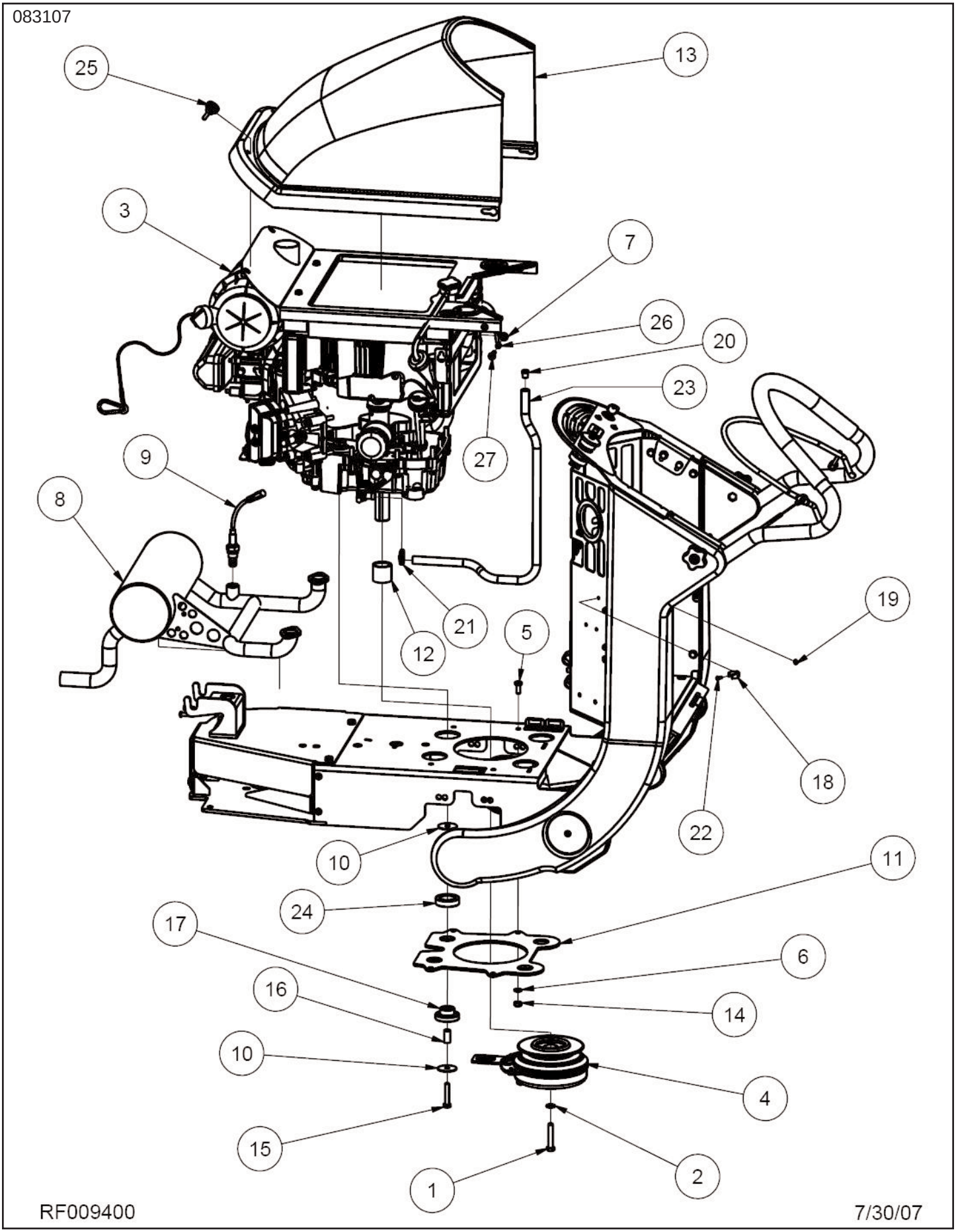
Ref.	Part #	Description	Qty.
2	RV022200	SHROUD, 24” REVOLUTION, ASSEMBLY	1
2.1	RV022300	SHROUD, 24”, REVOLUTION, PAINTED	1
2.2	MP007300	DECAL, KEEP HANDS/FEET	1
2.3	MP139900	BUSHING, SKIRT, STEEL	1
2.4	NB038800	SCREW, SOCKET HD, 1/4”-20 X 1 1/4” W/LOCTITE	1
2.5	MP8300	VELCRO, HOOK, 1” W/ADHESIVE, 25 YDS/ROLL	2.5 YDS
2.6	NB3275	NUT, LOCK, 1/4”	1
2.7	RV007600	TUBE, DUST	1
2.8	RV013201	SCOOP, 24”	1
2.9	NB3350	WASHER, FLAT, 1/4”	5
2.10	NB3001	SCREW, BH, 1/4”-20 X 3/4”	5
2.11	MP139600	FELT, POLYESTER, 28 OZ, BLACK	7.5 FT
2.12	NB038700	RIVET, 3/16” X 1/2” X 3/8” HD	9

24” SKIRT ASSEMBLY

Ref.	Part #	Description	Qty.
3	RV022400	SKIRT, STEEL, 24” REVOLUTION, ASSEMBLY	1
3.1	MX1045	NUT, HEX, 1/4”-20	1
3.2	NB3350	WASHER, FLAT, 1/4”	2
3.3	NB050600	BOLT, HEX, TAP, 1/4”-20 X 2 1/2”	1
3.4	PG007300	SKIRT, STEEL, 24”, PAINTED	1
3.5	MP140000	FELT, DOT	1
3.6	MP139800	EDGING, WEAR, SKIRT, STEEL	1
3.7	NB043900	RIVET, 3/16” X 1/2” X 5/8” HD, BLACK	5
3.8	NB044000	WASHER, FLAT, #10, BLACK	5
3.9	MP139700	MOLDING, BUMPER, SKIRT, STEEL	7 FT
3.10	NB6501	INSERT, 1/4”-20, COMPRESSION TYPE	1

030308

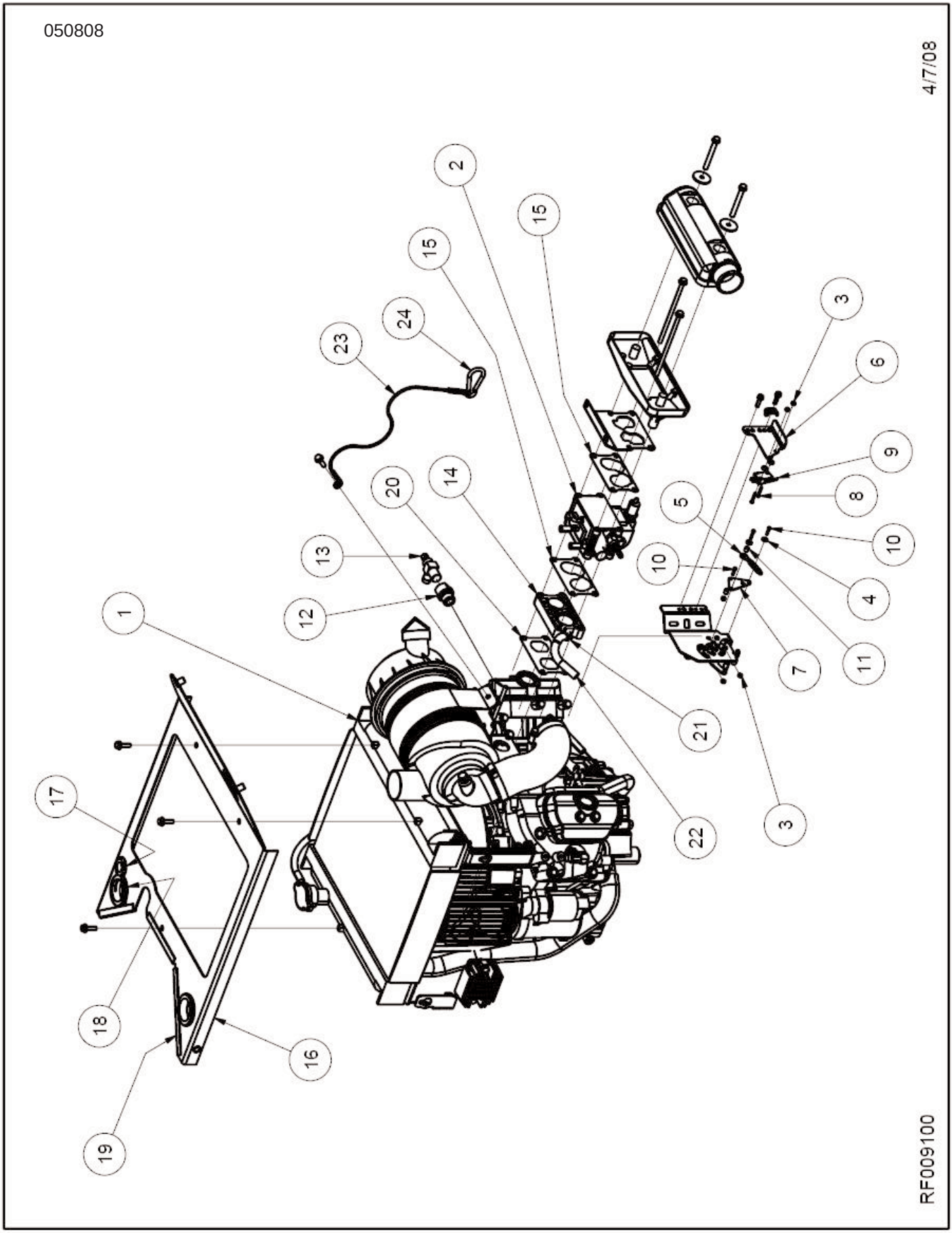
Engine Assembly



Engine Assembly Continued

Ref.	Part #	Description	Qty.
1	NB4791	SCREW, CAP, 3/8 X 2”	1
2	MX1075	WASHER, LOCK, 3/8”	1
3	RV019100	ENGINE, KAWASAKI, FD731V, REV., ASM.	1
4	MP250300	CLUTCH, RXL40, ASM.	1
5	NB9745	SCREW, CAP, 5/16”-18 X 3/4”	4
6	NB6111	WASHER, LOCK, 5/16”	4
7	NB3350	WASHER, FLAT, 1/4”	14
8	MP271800	MUFFLER, EXHAUST, ENGINE, FD731V	1
9	MP018000	SENSOR, OXYGEN, FUEL INJ.	1
10	NB9505	WASHER, FLAT, 5/16” X 1 1/2”	8
11	RV023501	PLATE, MOUNT, ISOLATOR, PAINTED	1
12	MP223100	SPACER, SHAFT, ENGINE	1
13	RV023400	INTAKE, AIR, REVOLUTION, ASM.	1
14	NB3260	NUT, 5/16”-18, NC	4
15	NB054200	BOLT, HEX, M8 x 45	4
16	MP223000	BUSHING, MOUNT, VIBRATION	4
17	MP276300	BUSHING, ISOLATOR, VIBRATION	4
18	MP4511	CLIP, OIL DRAIN SPRING, ASSEMBLY	1
19	NB9530	NUT, LOCK/WASHER, 6-32	1
20	NB1621	CAPLUG, K8, RED	1
21	NB7282	CLAMP, HOSE, NO. 38	1
22	NB054300	SCREW, 6-32 X 1”, SS	1
23	MP4515	TUBING, OIL DRAIN	1
24	MP276000	RING, ISOLATOR, VIBRATION	4
25	MP155600	KNOB, FLUTED, 1/4-20 UNC X 3/4” STUD	2
26	NB054700	SPACER, 3/8 OD x 1/4 ID x .250 L, NYLON	2
27	NB030400	SCREW, PHILLIPS, PAN HD, 1/4-20 X 1	2

Engine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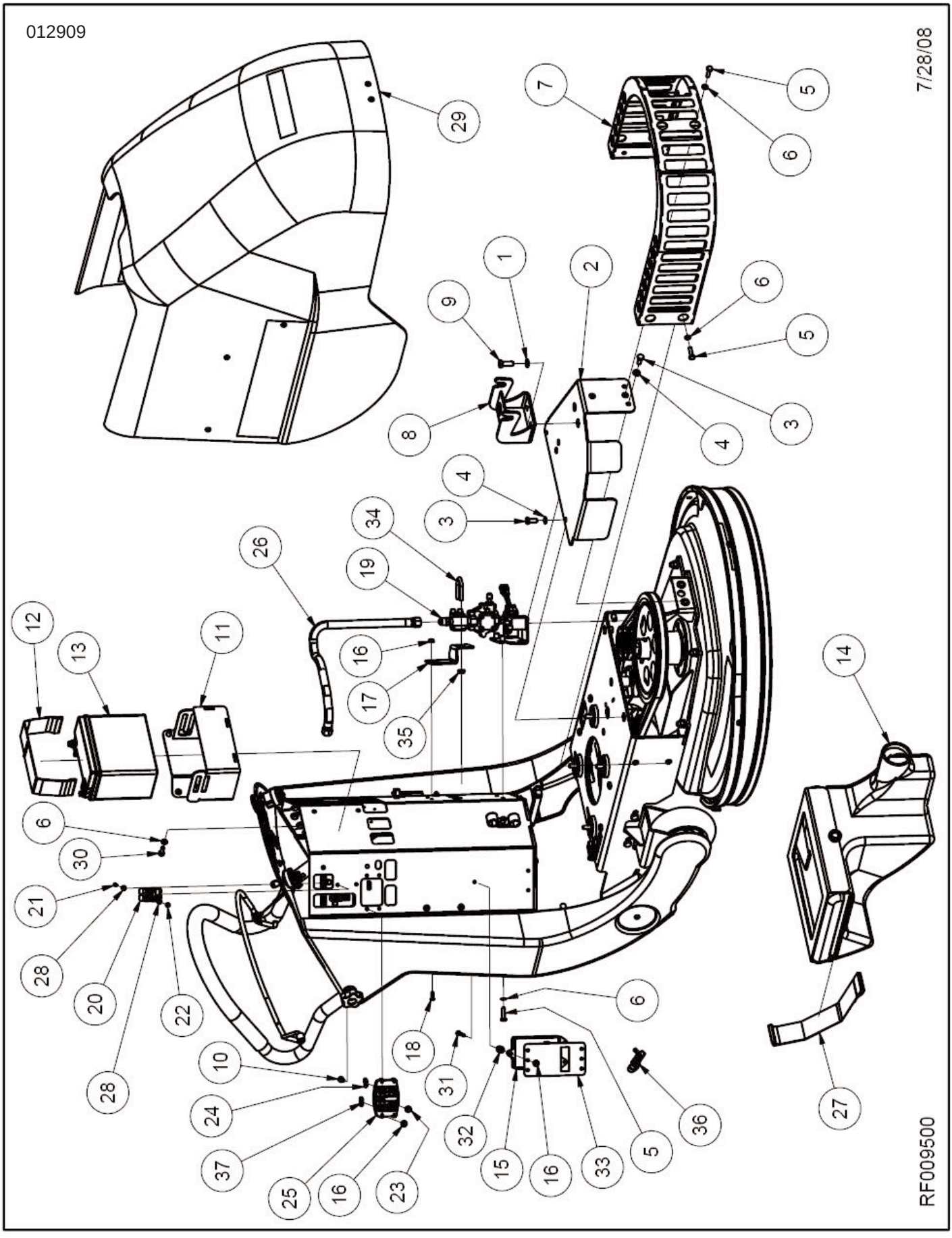
Engine Continued

Ref.	Part #	Description	Qty.
1	MP195100	ENGINE, KAWASAKI, 26HP, FD731V	1
2	MP243800	CARBURETOR, FD731V, ASM.	1
3	NB007000	NUT, LOCK, NYLON, 4-40	5
4	NB007100	WASHER, FLAT, #6	4
5	NB012300	WASHER, LINKAGE, .275 HOLE & .070 HOLE	1
6	MP271601	BRACKET, SWITCH, CLUTCH, FORMED	1
7	MP271701	PLATE, ENGAGEMENT, SWITCH, PAINTED	1
8	NB9625	SCREW, 4-40 X 3/4”	2
9	MP318400	SWITCH, MICRO, 12V, 15A, 1” LEVER	1
10	NB053900	SCREW, PAN HD, #4-40 X 1/2”	2
11	NB038900	SPACER, THREADED, 4-40, 1/4” OD X 1/4” LONG	1
12	KA590717004	ADAPTER, DRAIN, OIL	1
13	MP072300	VALVE, DRAIN, OIL, KAWASAKI	1
14	MP244000	BLOCK, SPACER, INTAKE, SUB-ASM.	1
15	KA110612075	GASKET, CARB, KAW.	2
16	RV019301	SHIELD, INTAKE, SCOOP, ASM.	1
17	NB009900	GROMMET, 11/16 X 1	1
18	NB043700	GROMMET, 1 1/2” ID X 3/16 GROOVE X 2 1/8”	2
19	IN1015	TRIM, BATTERY TRAY	1.25ft
20	KA110612128	GASKET, CARB, KAW.	1
21	NB2460	HOSE, VACUUM, 5/32	6”
22	NB045600	LOOM, SPLIT, 3/8” I.D., BLACK	5”
23	MP167100	LANYARD, COVER, ENGINE	1
24	NB054100	SNAP, SPRING, 1/4” DIA., 5/16” EYE	1

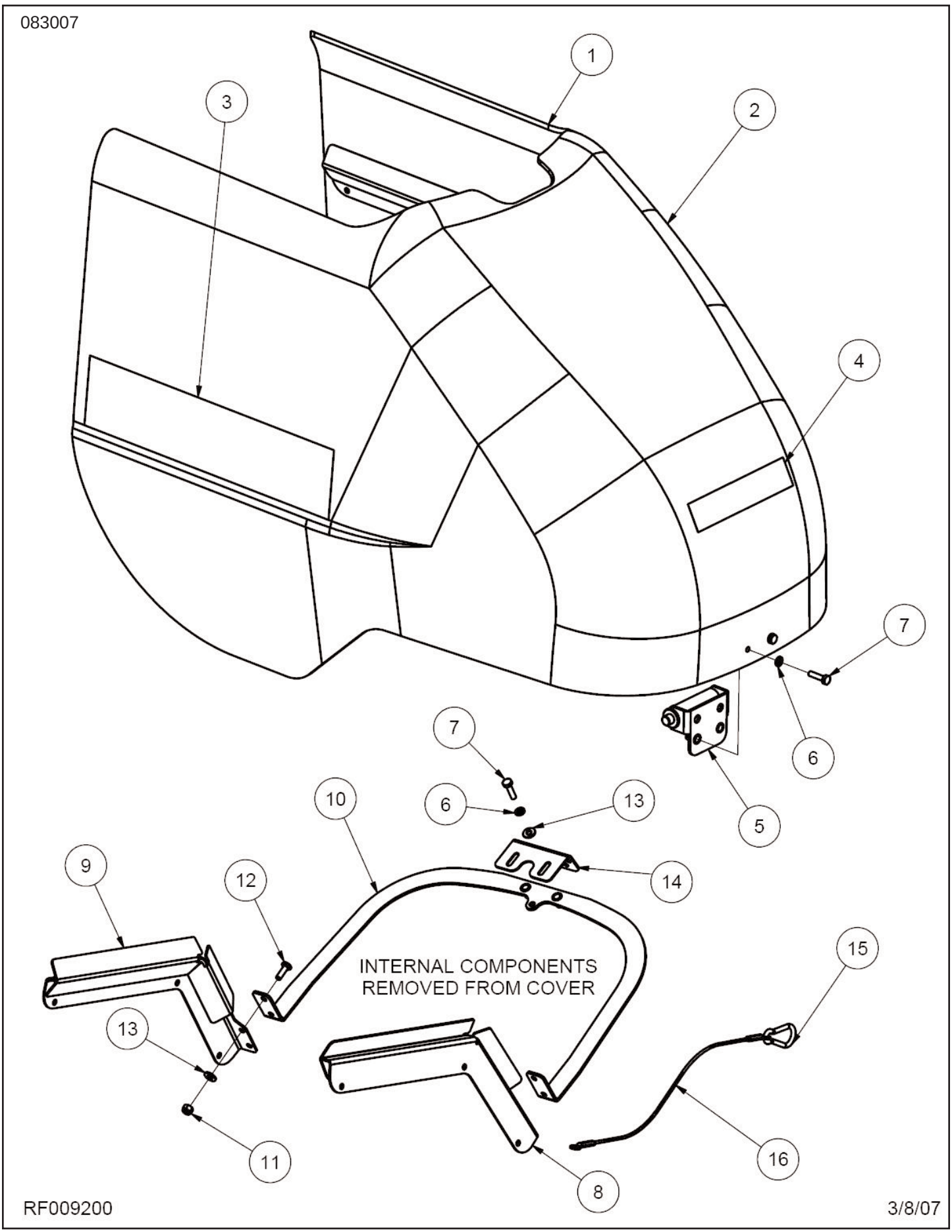
Final Assembly



Final Assembly Continued

Ref.	Part #	Description	Qty.
1	MX1075	WASHER, LOCK, 3/8”	2
2	RV018100	COVER, BELT, REVOLUTION, ASM.	1
3	NB9745	SCREW, CAP, 5/16”-18 X 3/4”	4
4	NB6111	WASHER, LOCK, 5/16”	4
5	NB6530	SCREW, CAP, HH, 1/4”-20 X 1”	12
6	NB6110	WASHER, LOCK, 1/4”	12
7	RV018300	GRILL, EXHAUST, REVOLUTION, WELDMENT	1
8	MP271000	BRACKET, HINGE, COVER, ENGINE, WELDMENT	1
9	NB6042	SCREW, CAP, 3/8” X 1”	8
10	NB5350	SCREW, MACHINE, TH, 10-24 X 1”	8
11	RV020200	TRAY, BATTERY, REVOLUTION, ASM.	1
12	MP273200	STRAP, BATTERY, ADJUSTABLE	1
13	MP120800	BATTERY, DEKA, SEAMATE, AGM	1
14	RV021000	BOX, COLLECTION, DUST, ASM.	1
15	MP318800	ECU, FUEL INJECTION, FD731,	1
16	NB9510	NUT, SPIN LOCK, 10-24	14
17	MP321001	BRACKET, SUPPORT, FUEL INJECTION,	1
18	NB049200	SCREW, BH, 10-24 X 5/8”, SS	2
19	MP272400	FUEL INJECTION, REVOLUTION, ASM.	1
20	MP151500	RELAY, BOARD, CIRCUIT, PRINTED, 12V	1
21	NB9200	SCREW, MACHINE, ROUND HD, 6-32 X 5/8”	2
22	NB020800	NUT, LOCK, NYLON, 6-32	2
23	NB9845	NUT, KEPS, 1/4”-20	1
24A	MP043000	FUSE, 7.5 AMP (DOMESTIC VERSION)	3
24B	MP043000	FUSE, 7.5 AMP (EJ VERSION)	1
25	MP151800	BLOCK, FUSE, ATC, TERMINAL, REAR	1
26	MP4300	HOSE, 18”, REGULATOR	1
27	MP271300	STRAP, BOX, DUST, ADJUSTABLE	1
28	NB007100	WASHER, FLAT, #6	4
29	RV023900	COVER, ENGINE, NXG, ASM.	1
30	NB019100	BOLT, HEX, 1/4-20 X 3/4, GD 5	4
31	NB060400	SCREW, PAN HD PHILLIPS, 10-24 X 2	3
32	NB008700	SPACER, NYLON, .50 O.D., .25 I.D., .75L	3
33	MP320801	PLATE, COVER, ECU, PAINTED	1
34	NB060200	BOLT, U, 1/4-20 X 1” I.D.	1
35	NB9545	NUT, SPIN LOCK, 1/4-20	2
36	MP318700	SENSOR PRESSURE MANIFOLD (MAP)	1
37	SS2570	FUSE, 20 AMP, ATO	1

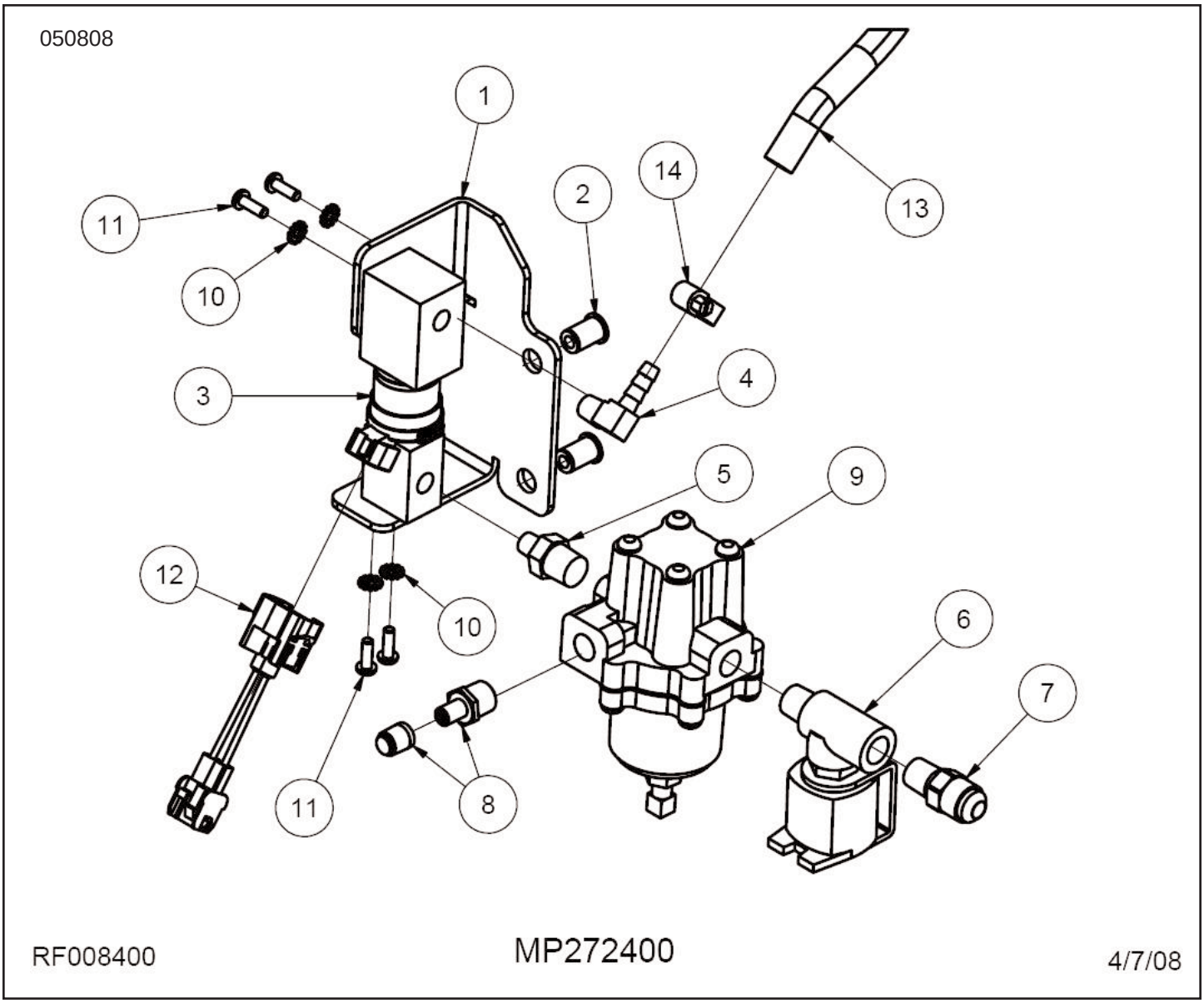
Engine Cover Assembly



Engine Cover Assembly Continued

Ref.	Part #	Description	Qty.
1	RV023900	COVER, ENGINE, NXG, ASM.	1
2	RV016300	COVER, ENGINE, REVOLUTION	1
3	RV021400	DECAL, REVOLUTION, 16”	2
4	MP023600	DECAL, PIONEER ECLIPSE	1
5	RV022000	BRACKET, PIN, PIVOT, HINGE, ASM.	1
6	NB6110	WASHER, LOCK, 1/4”	4
7	NB6530	SCREW, CAP, HH, 1/4”-20 X 1”	4
8	RV024400	SUPPORT, COVER, ENG., RS, WELD.	1
9	RV024300	SUPPORT, COVER, ENG., LS, WELD.	1
10	RV024101	FRAME, SUPPORT, CENTER COVER, ENG., FORMED	1
11	NB3275	NUT, LOCK, 1/4”	4
12	NB019100	BOLT, HEX, 1/4”-20 X 3/4”, GD 5	4
13	NB3350	WASHER, FLAT, 1/4”	6
14	RV024201	BRACKET, SUPPORT, CENTER	1
15	NB054100	SNAP, SPRING, 1/4” DIA., 5/16” EYE	1
16	MP167100	LANYARD, COVER, ENGINE	1

Fuel Injection Assembly



Ref.	Part #	Description	Qty.
1	MP320701	BRACKET, MOUNTING, REGULATOR, FORMED	1
2	NB6501	INSERT, 1/4”-20, COMPRESSION TYPE	2
3	MP318900	INJECTOR, FUEL, PROPANE	1
4	MP243700	FITTING, 1/8” MNPT X 1/4” BARB, 90 DEG, ELB	1
5	MP242500	FITTING, 1/4” MNPT X 1/8” MNPT	1
6	MP245500	FUELOCK, 12V, VALTEK	1
7	MP4320	FITTING, 48 X 6	1

Ref.	Part #	Description	Qty.
8	MP306000	VALVE, FILLER, AIR TANK	1
9	MP245600	REGULATOR, FUEL INJECTION	1
10	NB9730	WASHER, STAR #8	4
11	NB6540	SCREW, BH, 8-32 X 1/2	4
12	MP260200	HARNESS, WIRING, PIGTAIL, FUEL INJ.	1
13	MP239600	HOSE, FUEL, 1/4” I.D. (31.5”)	1
14	NB050700	CLAMP, HOSE, 1/4”-5/8”	1

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Dust Container Assembly

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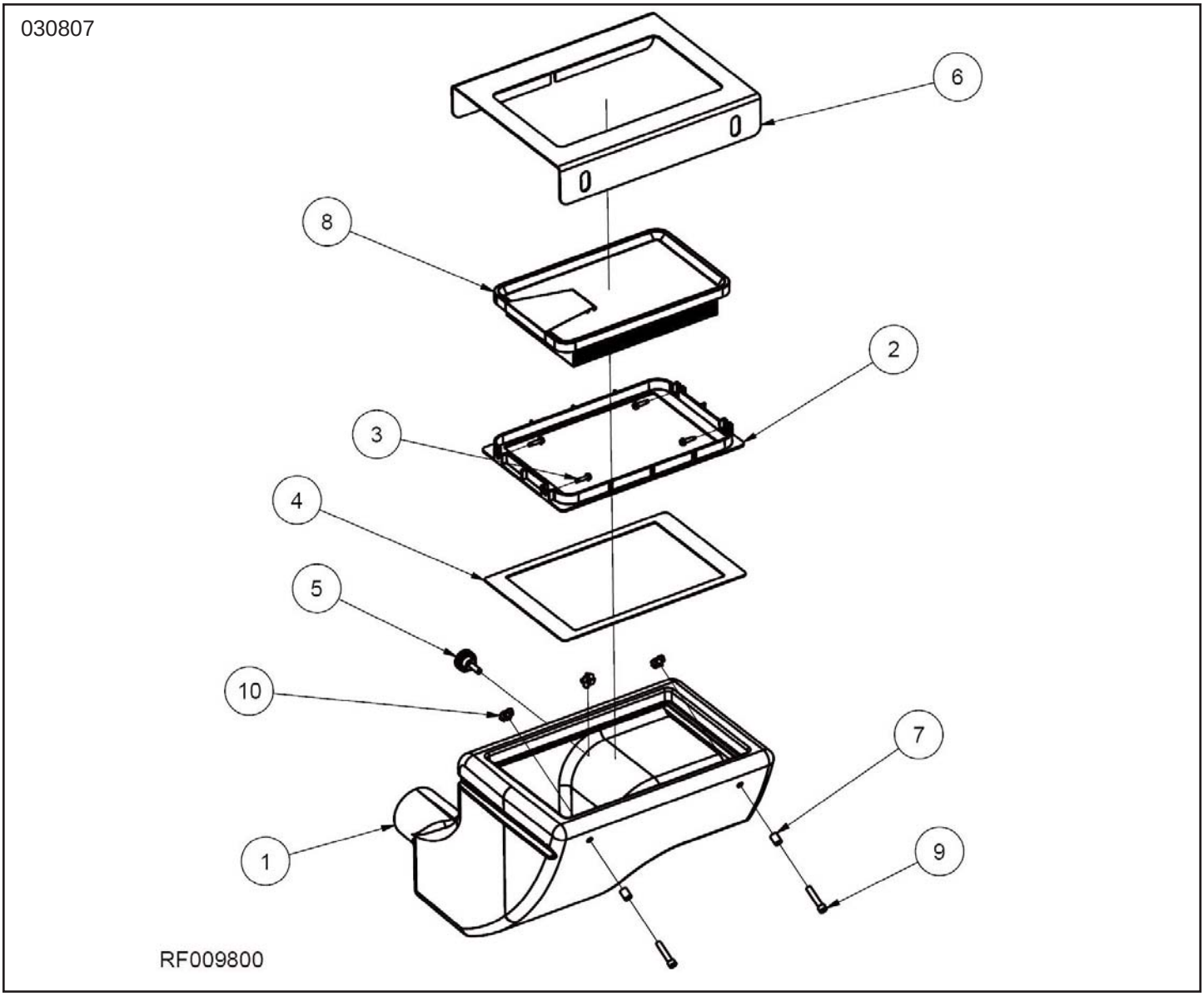

Ref.	Part #	Description	Qty.
1	RV023800	CONTAINER, DUST COLLECTION, NXG, TRIMMED	1
2	RV015600	INSERT, FRAME, FILTER, REVOLUTION	1
3	NB4381	SCREW, DRILL KWIK, 8 X 3/4”	4
4	RV015800	SEAL, DUST COLLECTION, REVOLUTION	1
5	MP155600	KNOB, FLUTED, 1/4”-20 UNC X 3/4” STUD	1

Ref.	Part #	Description	Qty.
6	RV021201	RETAINER, FILTER, FORMED	1
7	MP272200	SPACER, 3/8” O.D. X 1/4” I.D. X 1/2” L	2
8	MP095100	FILTER, DUST COLLECTION, ASM.	1
9	NB038800	SCREW, SOCKET HD, 1/4”-20 X 1 1/4” LOCTITE	2
10	NB047700	INSERT, T-NUT, 1/4”-20, 4-PRONG	3

032907

Limited Warranty
Revolution REV24NXG & REV28NXG Burnishers

The Revolution propane burnishers REV24NXG and REV28NXG are warranted to be free of defects in materials and workmanship for a period of three (3) years from the date of purchase by the original owner apart from the EXCLUSIONS AND EXCEPTIONS noted below.

TO QUALIFY FOR THIS WARRANTY:

1. Machine must be registered at the time of purchase on a form provided by Amano Pioneer Eclipse Corporation. Your Amano Pioneer Eclipse Distributor is responsible for the registration of your machine. Please cooperate with your distributor in supplying necessary information on the card.
2. The machine must have been purchased from Amano Pioneer Eclipse or an authorized Amano Pioneer Eclipse Distributor.
3. This warranty extends to the original purchaser only and is not transferable to subsequent owners.

EXCLUSIONS:

1. Parts that fail through normal wear by reason of their characteristics including, pads, dust skirt edging, belts, dust container filters, spark plugs, air filters, oil filters, etc., are not warranted.
2. Parts affected by misuse, neglect, abuse, or improper maintenance are not warranted.

EXCEPTIONS:

1. The engine is warranted, except for the valve train noted below, for four (4) years provided that Kawasaki approved oil is used each time the oil is changed or added to the crankcase. Written records are required to show that Kawasaki approved oil was used. Revolution burnishers shipped by overland freight have the correct amount of Kawasaki oil added to the engine before shipping.
2. The engine is warranted, except for the valve train noted below, for two (2) years if Kawasaki approved oil is not used each time the oil is changed or added to the crankcase.
3. The engine valve train is warranted by Pioneer Eclipse for one (1) year.
4. Batteries are warranted by the battery manufacturer for one (1) year.
5. The machine frame is warranted for five (5) years.

THE OBLIGATION OF AMANO PIONEER ECLIPSE CORPORATION:

1. The obligation of Amano Pioneer Eclipse under this warranty is limited to repairing or replacing, at it's option, any part which is proven to be defective in material or workmanship under normal use for the applicable period stated above.
2. Warranty repairs will be made by your Amano Pioneer Eclipse Distributor without charge for parts or labor for a period of one (1) year from the date of purchase by the original owner apart from the Exclusions and Exceptions noted.
3. Parts repaired or replaced under this warranty are warranted only during the balance of the original warranty period. All defective parts replaced under these warranties become the property of Amano Pioneer Eclipse.
4. All defective parts must be returned to an authorized Amano Pioneer Eclipse Distributor for credit.

WARRANTY SERVICE:

To obtain warranty service, take your machine and proof of purchase to any authorized Amano Pioneer Eclipse Distributor. Amano Pioneer Eclipse will not reimburse expenses for service calls or travel. For the distributor in your area, call Amano Pioneer Eclipse Customer Service Department at 1-800-367-3550 or 1-336-372-8080. If you are dissatisfied with the service that you receive, call or write Amano Pioneer Eclipse Customer Service Department for further assistance.

DISCLAIMER OF CONSEQUENTIAL:

AMANO PIONEER ECLIPSE DISCLAIMS ANY RESPONSIBILITY FOR LOSS OF USER TIME OF THE PIONEER ECLIPSE MACHINE OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGE EXCEPT AS STATED IN THE WARRANTY APPLICABLE TO EACH MACHINE. EXCEPT AS STATED IN SUCH WARRANTIES, THE COMPANY DOES NOT OTHERWISE WARRANT ANY MACHINE AND NO WARRANTY, EXPRESS, IMPLIED, OR STATUTORY IS MADE BY THE COMPANY.

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Serial #:	
DOM:	
Built in NC, USA	

Machinery Directive 98/37/EC Restriction of Hazardous Substances Directive 2002/95/EC